



ADMINISTRATIVE RECORD

# **MSDS**

## **REAGENTS USED IN THE MILL FLOTATION PROCESS**

**LIBBY, MT**

## **MSDS SUMMARY SHEET**

**Manufacturer:**

**Name:** PHILLIPS PETROLEUM COMPANY

**Address 1:**

**Address 2:**

**Address 3:**

**CSZ:** BARTLESVILLE **State:** OK **Zipcode:** 74004

**Emergency phone:** (800) 424-9300

**Business phone:** 800-762-0942

**Product:**

**Ferndale MSDS#:** 1354 **Version # :** 6

**Manufacturer MSDS#:** 0041

**Current? :** 2002

**Name:**

**NO. 2 DIESEL FUEL**

**Synonyms:**

CARB Diesel TF3

CARB Diesel

CARB Diesel 10%

Diesel Fuel Oil

EPA Low Sulfur Diesel Fuel

EPA Low Sulfur Diesel Fuel – Dyed

EPA Off Road High Sulfur Diesel – Dyed

Fuel Oil No. 2 – CAS # 68476-30-2

No. 2 Diesel Fuel Oil

No. 2 Fuel Oil – Non Hiway – Dyed

No. 2 High Sulfur Diesel – Dyed

No. 2 Low Sulfur Diesel - Dyed

No. 2 Low Sulfur Diesel - Undyed

Crude column 3<sup>rd</sup> IR

Crude column 3<sup>rd</sup> side cut

Atmospheric tower 3<sup>rd</sup> side cut

Ultra Low Sulfur Diesel No. 2

Finished Diesel

DHT Reactor Feed

Straight Run Diesel

Diesel

Middle Distillate

**Product/Catalog Numbers:**

**MSDS Date:** 01/01/2002 **(received:** 01/14/2002)

**NFPA codes:**

**Health:** 0 **Flammability:** 2 **Reactivity:** 0

**MATERIAL SAFETY DATA SHEET**  
**No. 2 Diesel Fuel**

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product Name:** No. 2 Diesel Fuel  
**Product Code:** Multiple  
**SAP Code:**  
**Synonyms:** 1354  
CARB Diesel TF3  
CARB Diesel  
CARB Diesel 10%  
Diesel Fuel Oil  
EPA Low Sulfur Diesel Fuel  
EPA Low Sulfur Diesel Fuel – Dyed  
EPA Off Road High Sulfur Diesel – Dyed  
Fuel Oil No. 2 – CAS # 68476-30-2  
No. 2 Diesel Fuel Oil  
No. 2 Fuel Oil – Non Hiway – Dyed  
No. 2 High Sulfur Diesel – Dyed  
No. 2 Low Sulfur Diesel - Dyed  
No. 2 Low Sulfur Diesel – Undyed  
No. 2 Ultra Low Sulfur Diesel – Dyed  
No. 2 Ultra Low Sulfur Diesel - Undyed  
Fuel

**Intended Use:**

**Chemical Family:**

**Responsible Party:** Phillip's Petroleum Company  
Bartlesville, Oklahoma 74004

**For Additional MSDSs:** 800-762-0942

**Technical Information:**

The intended use of this product is indicated above. If any additional use is known, please contact us at the Technical Information number listed.

**EMERGENCY OVERVIEW**

**24 Hour Emergency Telephone Numbers:**

Spill, Leak, Fire or Accident

California Poison Control System: 800-356-3120

Call CHEMTREC

North America: (800) 424-9300

Others: (703) 527-3887 (collect)

**Health Hazards/Precautionary Measures:** Causes severe skin irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash thoroughly after handling.

**Physical Hazards/Precautionary Measures:** Flammable liquid and vapor. Keep away from heat, sparks, flames, static electricity or other sources of ignition.

**Appearance:** Straw-colored to dyed red  
**Physical Form:** Liquid  
**Odor:** Characteristic petroleum

**HFPA Hazard Class:**

Health: 0 (Least)  
 Flammability: 2 (Moderate)  
 Reactivity: 0 (Least)

**HMIS Hazard Class**

Not Evaluated

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>HAZARDOUS COMPONENTS</u>	<u>% VOLUME</u>	<u>EXPOSURE GUIDELINE</u>		
		<u>Limits</u>	<u>Agency</u>	<u>Type</u>
Diesel Fuel No. 2 CAS# 68476-34-6	100	100* mg/m3	ACGIH	TWA-SKIN
Naphthalene CAS# 91-20-3	<1	10ppm	ACGIH	TWA
		15ppm	ACGIH	STEL
		10ppm	OSHA	TWA
		250ppm	NIOSH	IDLH

All components are listed on the TSCA inventory

Tosco Low Sulfur No. 2 Diesel meets the specifications of 40 CFR 60.41 for low sulfur diesel fuel.

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

\*Proposed ACGIH (1999)

**3. HAZARDS IDENTIFICATION****Potential Health Effects:**

**Eye:** Contact may cause mild eye irritation including stinging, watering, and redness.

**Skin:** Severe skin irritant. Contact may cause redness, itching, burning, and severe skin damage. Prolonged or repeated contact can worsen irritation by causing drying and cracking of the skin, leading to dermatitis (inflammation). Not actually toxic by skin absorption, but prolonged or repeated skin contact may be harmful (see Section 11).

**Inhalation (Breathing):** No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.

**Ingestion (Swallowing):** Low degree of toxicity by ingestion. ASPIRATION HAZARD – This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

**Signs and Symptoms:** Effects of overexposure may include irritation of the nose and throat, irritation of the digestive tract, nausea, diarrhea and transient excitation followed by signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

**Cancer:** Possible skin cancer hazard (see Sections 11 and 14).

**Target Organs:** There is limited evidence from animal studies that overexposure may cause injury to the kidney (see Section 11).

**Developmental:** Inadequate data available for this material.

**Pre-Existing Medical Conditions:** Conditions aggravated by exposure may include skin disorders and kidney disorders.

#### **4. FIRST AID MEASURES**

**Eye:** If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

**Skin:** Immediately remove contaminated shoes, clothing, and constrictive jewelry and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek immediate medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops, seek immediate medical attention.

**Inhalation (Breathing):** If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

**Ingestion (Swallowing):** Aspiration hazard; Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

#### **5. FIRE FIGHTING MEASURES**

**Flammable Properties:**

Flash Point: >125°F/>52°

OSHA Flammability Class: Combustible liquid

LEL %: 0.3 / UEL %: 10.0

Autoignition Temperature: 500°F/260°C

**Unusual Fire & Explosion Hazards:** This material is flammable and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

**Extinguishing Media:** Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

**Fire Fighting Instructions:** For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk.

Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

## **6. ACCIDENTAL RELEASE MEASURES**

Flammable. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of explosion-proof equipment is recommended.

Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).

Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Use foam on spills to minimize vapors (see Section 5). Spilled material may be absorbed into an appropriate material.

Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

## **7. HANDLING AND STORAGE**

**Handling:** Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharged. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8).

Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames. Use good personal hygiene practices.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing or high pressure hydraulic oil equipment.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1 and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

**Storage:** Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area "No Smoking or Open Flame." Store only in approved containers. Keep away from incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Engineering controls:** If current ventilation practices are not adequate to maintain airborne concentration below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used (see appropriate electrical codes).

**Personal Protective Equipment (PPE):**

**Respiratory:** A NIOSH certified air purifying respirator with an organic vapor cartridge maybe used under conditions where airborne concentrations are expected to exceed exposure limits (see Section 2).

Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a positive pressure air supplied respirator if there is a potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrants a respirator's use.

**Skin:** The use of gloves impervious to the specific material handled is advised to prevent skin contact, possible irritation and skin damage (see glove manufacturer literature for information on permeability). Depending on conditions of use, apron and/or arm covers may be necessary.

**Eyes/Face:** Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield may be necessary.

**Other Protective Equipment:** Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse. It is recommended that impervious clothing be worn when skin contact is possible.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1atm).

Appearance: Straw-colored to dyed red

Physical State: Liquid

Odor: Characteristic petroleum

pH: unavailable

Vapor Pressure (mm Hg): 0.40

Vapor Density (air=1): >3

Boiling Point/Range: 320-700°F / 160-371°C

Freezing/Melting Point: No Data

Solubility in Water: Negligible

Specific Gravity: 0.81-0.88 @ 60°F

Percent Volatile: Negligible

Evaporation Rate (nBuAc=1): <1

Viscosity: 32.6-40.0 SUS @ 100°F

Bulk Density: 7.08 lbs/gal

Flash Point: >125°F / >52°C

Flammable/Explosive Limits (%): LEL: 0.3 / UEL: 10.0

**10. STABILITY AND REACTIVITY**

**Stability:** Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. Flammable liquid and vapor. Vapor can cause flash fire.

**Conditions To Avoid:** Avoid all possible sources of ignition (see Sections 5 and 7).

**Materials to Avoid (Incompatible Materials):** Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite, calcium hypochlorite, etc.

**Hazardous Decomposition Products:** The use of hydrocarbon fuels in an area without adequate ventilation may result in hazardous levels of combustion products (e.g., oxides of carbon, sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels. ACGIH has included a TLV of 0.05 mg/m<sup>3</sup> TWA for diesel exhaust particulate on its 1999 Notice of Intended Changes. See Section 11 for additional information on hazards of engine exhaust.

**Hazardous Polymerization:** Will not occur.

## **11. TOXICOLOGICAL INFORMATION**

### **Diesel Fuel No. 2 (CAS# 68476-34-6)**

**Carcinogenicity:** Chronic dermal application of certain middle distillate streams contained in diesel fuel No. 2 resulted in an increased incidence of skin tumors in mice. This material has not been identified as carcinogen by NTP, IARC, or OSHA. Diesel exhaust is a probable cancer hazard based on tests with laboratory animals.

**Target Organ(s):** Limited evidence of renal impairment has been noted from a few case reports involving excessive exposure to diesel fuel No. 2.

### **Naphthalene (CAS# 91-20-3)**

**Carcinogenicity:** Naphthalene has been evaluated in two year inhalation studies in both rats and mice. The National Toxicology Program (NTP) concluded that there is clear evidence of carcinogenicity in male and female rats based on increased incidences of respiratory epithelial adenomas and olfactory epithelial neuroblastomas of the nose. NTP found some evidence of carcinogenicity in female mice (alveolar adenomas) and no evidence of carcinogenicity in male mice. Naphthalene has not been identified as a carcinogen by IARC or OSHA.

## **12. ECOLOGICAL INFORMATION**

Not evaluated at this time

## **13. DISPOSAL CONSIDERATIONS**

This material, if discarded as produced, would be a RCRA "characteristic" hazardous waste due to the characteristic(s) of ignitability (D001) and benzene (D018). If the material is spilled to soil or water, characteristic testing of the contaminated materials is recommended. Further, this material, once it becomes a waste, is subject to the land disposal restrictions in 40 CFR 268.40 and may require treatment prior to disposal to meet specific standards. Consult state and local regulations to determine whether they are more stringent than the federal requirements.

Container contents should be completely used and containers should be emptied prior to discard. Container insate? could be considered a RCRA hazardous waste and must be disposed of with care and in compliance with federal, state and local regulations. Large empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller containers, consult with state and local regulations and disposal authorities.

## **14. TRANSPORT INFORMATION**

<b>DOT Shipping Description:</b>	Diesel Fuel, NA1983
<b>Non-Bulk Package Marking:</b>	Diesel Fuel, 3, NA 1993, III



## 15. REGULATORY INFORMATION

### EPA SARA 311/312 (Title III Hazard Categories):

Acute Health:	Yes
Chronic Health:	Yes
Fire Hazard:	Yes
Pressure Hazard:	No
Reactive Hazard:	No

### SARA 313 and 40 CFR 372:

This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

Component	CAS Number	Weight %
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-- None known --

### California Proposition 65:

**Warning:** This material contains the following chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Effect
Benzene	Cancer, Developmental and Reproductive Toxicant
Toluene	Developmental Toxicant

Diesel engine exhaust, while not a component of this material, is on the Proposition 65 list of chemicals known to the State of California to cause cancer.

### Carcinogen Identification:

This material has not been identified as a carcinogen by NTP, IARC, or OSHA. See Section 11 for carcinogenicity information of individual components, if any. Diesel exhaust is a probable cancer hazard based on tests in laboratory animals. It has been identified as carcinogen by IARC.

EPA (CERCLA Reportable Quantity): None

## 16. OTHER INFORMATION

Issue Date: 01/01/02

Previous Issue Date: 05/15/01

Product Code: Multiple

Revised Sections: None

Previous Product Code: Multiple

MSDS Number: 0041

### **Disclaimer of Expressed and Implied Warranties:**

The information presented in this Material Data Safety Sheet is based on data believed to be accurate as of the date this Material Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THE PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

Tosco Refining Company

Ferndale Refinery

**UltraLow Sulfur Diesel Product Specification**

Ferndale Product Code:34380xx (5) Product Code: ULSD2

(COMETS)

Specification	Unit	Limit	Test Procedure	Typical
Appearance				
Water & Sediment	Vol %	0.05 Max	D 2709	
Color	Number	3.0 Max	D 1500	
Haze Rating	Rating	2 Max	D 4176	
Composition				
Carbon Residue (Ramsbottom)	Wt %	0.35 Max	D 524, D 189	
Volatility				
90% Recovered	Deg; F	540 Min	D 86	
	Deg; F	640 Min	D 86	
Flash Point	Deg; F	125 Min (1)	D 93	130 F
Gravity	API	30 Min	D 287, D4052	
Fluidity				
Pour Point	Deg; F	See Season Table (6)	D 97	
Cloud Point	Deg; F	See Season Table (6)	D 2500	10 F
Viscosity @ 104F	cSt	1.9 Min	D 445	
	cSt	4.1 Max	D 445	
Lubricity, SLBOCLE	grams	3100 Min	D 6078	3300gm
Lubricity, HFRR	mm	.45	D 6079	
Combustion				
Cetane Index or Cetane Number (3,4)	Number	40.0 Min	D 976, D613	47.0
Corrosion				
Copper Strip, 3hr @ 50 deg C	Number	3 Max (2)	D 130	
Aromatics (4)	Vol %	35 Max	D 1319	25 %
Contaminants				
Total Sulfur	PPM	30 Max	D 2622, D4294	15-20ppm
Water & Sediment	Vol %	0.05 Max	D 1796	
Ash	Wt %	0.01 Max	D 482	
Additives				
Cetane Improver	Lb/MBbl	675 Max		
Dye		Undyed		

1. Minimum release specification is 125 deg. F. The refinery should target 135 deg. F.
2. Test result reported as a number and letter (e.g. 1a). Any letter is allowable as long as the number meets the spec shown.
3. Either specification must be met.
4. Either cetane index minimum or aromatics maximum must be met.
5. Winter cloud and pour specifications may be relaxed to the summer specifications by agreement with the customer.
6. Season Table

Month	Product Code	Pour Point	Cloud Point
Jan, Feb, Nov, Dec	WI	0 max (5)	14 max (5)
Mar - Oct	SU	15 max	24 max

#5 Diesel



## Material Safety Data Sheet

MSDS ID NO.: 0241MAR019  
Revision date: 07/25/2006

### 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

**Product name:** Marathon No. 5 Fuel Oil  
**Synonym:** No. 5 Fuel Oil  
**Chemical Family:** Petroleum Hydrocarbon  
**Formula:** Mixture

**Manufacturer:**  
Marathon Petroleum Company LLC  
539 South Main Street  
Findlay OH 45840

**Other information:** 419-421-3070  
**Emergency telephone number:** 877-627-5463

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Heavy or residual fuel is a complex mixture of high molecular weight hydrocarbons produced from high temperature treatment of heavy petroleum fractions.

#### Product information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Marathon No. 5 Fuel Oil	Mixture	100			

#### Component Information:

Name	CAS Number	Weight %	ACGIH Exposure Limits:	OSHA - Vacated PELs - Time Weighted Ave	Other:
Catalytic Cracked Clarified Oil	64741-62-4	0-100			
No. 6 Fuel Oil	68553-00-4	0-70			
Middle Distillate Fuel	64741-44-2	10-30			
Petroleum Residua	Mixture	0-28			
Sulfur Compounds	Mixture	1-3			
Naphthalene	91-20-3	0.01-0.15	Skin - potential significant contribution to overall exposure by the cutaneous route ≈ 10 ppm TWA ≈ 15 ppm STEL	= 10 ppm TWA = 50 mg/m <sup>3</sup> TWA = 15 ppm STEL = 75 mg/m <sup>3</sup> STEL	
Hydrogen Sulfide	7783-06-4	0-0.01	≈ 10 ppm TWA ≈ 15 ppm STEL	= 10 ppm TWA = 14 mg/m <sup>3</sup> TWA = 15 ppm STEL = 21 mg/m <sup>3</sup> STEL	

#### Notes:

The manufacturer has voluntarily elected to reflect exposure limits contained in OSHA's 1989 air contaminants standard in its MSDS's, even though certain of those exposure limits were vacated in 1992.

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

THIS PRODUCT IS A BROWN TO BLACK COLORED LIQUID. THIS PRODUCT IS CONSIDERED TO BE A COMBUSTIBLE LIQUID PER THE OSHA HAZARD COMMUNICATION STANDARD AND SHOULD BE KEPT AWAY FROM HEAT, FLAME AND SOURCES OF IGNITION. LONG-TERM SKIN EXPOSURE TO COMPONENTS OF THIS PRODUCT HAS CAUSED CANCER IN LABORATORY ANIMALS AND HUMANS. REPEATED SKIN CONTACT TO SOME COMPONENTS OF THIS PRODUCT HAVE PRODUCED SYSTEMIC TOXICITY (INCLUDING LIVER DAMAGE) IN LABORATORY ANIMALS. WHEN HEATED THIS MATERIAL MAY VENT TOXIC LEVELS OF HYDROGEN SULFIDE (H<sub>2</sub>S) VAPORS THAT ACCUMULATE IN THE VAPOR SPACES OF STORAGE AND TRANSPORT COMPARTMENTS. H<sub>2</sub>S VAPORS CAN CAUSE EYE, SKIN, AND RESPIRATORY TRACT IRRITATION AND ASPHYXIATION.

#### OSHA WARNING LABEL:

**DANGER!**  
**COMBUSTIBLE LIQUID.**

**LONG-TERM SKIN EXPOSURE TO COMPONENTS OF THIS PRODUCT HAS CAUSED CANCER IN LABORATORY ANIMALS.**

**REPEATED SKIN CONTACT TO SOME COMPONENTS IN THIS PRODUCT HAS PRODUCED SYSTEMIC TOXICITY (INCLUDING LIVER DAMAGE) IN LABORATORY ANIMALS.**

**MAY VENT HARMFUL CONCENTRATIONS OF HYDROGEN SULFIDE (H<sub>2</sub>S) GAS WHICH CAN CAUSE RESPIRATORY IRRITATION AND ASPHYXIATION.**

#### CONSUMER WARNING LABEL:

**A CONSUMER WARNING LABEL IS NOT APPLICABLE FOR THIS PRODUCT.**

**Inhalation:** Exposure to vapor or mist may cause pulmonary irritation, dizziness, nausea and loss of consciousness. Significant concentrations of hydrogen sulfide gas can be present in the vapor space of storage tanks and bulk transport compartments (See Sections 7, 8 & 11).

**Ingestion:** Product would be expected to have a low order of acute toxicity. Significant ingestion of some components of this product may cause liver damage.

**Skin contact:** Prolonged and repeated liquid contact can cause dermatitis, folliculitis or oil acne. May cause sensitization by skin contact. Components of this product can cause liver damage if absorbed through the skin.

**Eye contact:** Liquid or vapor contact may result in slight eye irritation.

#### Carcinogenic Evaluation:

##### Product information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Marathon No. 5 Fuel Oil Mixture	NE			

**Notes:** The International Agency for Research on Cancer (IARC) has determined that there is sufficient evidence for the carcinogenicity of residual (heavy) fuel oil in animals.

##### Component Information:

Name	IARC Carcinogens:	NTP Carcinogens:	ACGIH - Carcinogens:	OSHA - Select Carcinogens:
Naphthalene 91-20-3	Monograph 82, 2002	Reasonably Anticipated To Be A Carcinogen Listed	A4 - Not Classifiable as a Human Carcinogen	Present

**Notes:**

The International Agency for Research on Cancer (IARC) has determined that there is inadequate evidence for the carcinogenicity of diesel fuel/fuel oil in humans. IARC determined that there was limited evidence for the carcinogenicity of marine diesel fuel in animals. Distillate (light) diesel fuels were not classifiable as to their carcinogenicity to humans (Group 3A).

The International Agency for Research on Cancer (IARC) has determined that there is sufficient evidence for the carcinogenicity of catalytically cracked clarified oil (carbonblack feedstock) in animals.

The International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) have concluded that certain polycyclic aromatic hydrocarbons, i.e. (benzo(a)pyrene, benz(a)anthracene, benzo(a)phenanthrene, indeno(1,2,3-cd)pyrene, benzo(j)fluoranthene, benzo(j,k)fluorine, benzo(g,h,i)perylene, and 5-methylchrysene are probably carcinogenic to humans (Group 2A and B).

The International Agency for Research on Cancer (IARC) and the Environmental Protection Agency (EPA) have determined that naphthalene could be a possible human carcinogen.

#### 4. FIRST AID MEASURES

<b>Inhalation:</b>	If affected, move person to fresh air. If breathing is difficult, administer oxygen. If not breathing or if no heartbeat, give artificial respiration or cardiopulmonary resuscitation (CPR). Immediately call a physician. If symptoms or irritation occur with any exposure, call a physician.
<b>Skin contact:</b>	Wash with soap and large amounts of water. Remove contaminated clothing. If symptoms or irritation occur, call a physician.
<b>Ingestion:</b>	Ingestion not likely. If swallowed, do not induce vomiting and do not give liquids. Immediately call a physician.
<b>Eye contact:</b>	Flush eyes with large amounts of tepid water for at least 15 minutes. If symptoms or irritation occur, call a physician.
<b>Medical conditions aggravated by exposure:</b>	Preexisting skin conditions, respiratory disorders, and impaired liver function may be aggravated by exposure to components of this product.

#### 5. FIRE FIGHTING MEASURES

<b>Suitable extinguishing media:</b>	For small fires, Class B fire extinguishing media such as CO <sub>2</sub> , dry chemical, foam (AFFF/ATC) or water spray can be used. For large fires, water spray, fog or foam (AFFF/ATC) can be used. Fire fighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.
<b>Specific hazards:</b>	This product has been determined to be a combustible liquid per the OSHA Hazard Communication Standard and should be handled accordingly. For additional fire related information, see NFPA 30 or the North American Emergency Response Guide 128.
<b>Special protective equipment for firefighters:</b>	Avoid using straight water streams. Water spray and foam (AFFF/ATC) must be applied carefully to avoid frothing and from as far a distance as possible. Avoid excessive water spray application. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material. Keep run-off water out of sewers and water sources.

**Flash point:**  
**Autoignition temperature:**  
**Flammable limits in air - lower (%):**  
**Flammable limits in air - upper (%):**

131 (Min) F  
765 F  
1.0  
6.0

**NFPA rating:**

Health: 2  
Flammability: 2  
Reactivity: 1  
Other: -

**HMIS classification:**

Health: 2  
Flammability: 2  
Reactivity: 1  
Special: \*See Section 8 for guidance in selection of personal protective equipment.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:**

Keep public away. Isolate and evacuate area. Shut off source if safe to do so. Advise authorities and National Response Center (800-424-8802) if substance has entered a watercourse or sewer. Notify local health and pollution control agencies, if appropriate. Contain liquid with sand or soil. Recover and return product to source.

## 7. HANDLING AND STORAGE

**Handling:**

Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements. Use appropriate grounding and bonding practices. Store in properly closed containers that are appropriately labeled and in a cool well-ventilated area. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Do not cut, drill, grind or weld on empty containers since they may contain explosive residues. The fuel oil contained in this product may flash if product temperature is >131 F.

Harmful concentrations of hydrogen sulfide (H<sub>2</sub>S) gas can be generated and accumulate in storage tanks and bulk transport compartments. Stay upwind and vent open hatches before unloading.

Avoid skin contact. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### PERSONAL PROTECTIVE EQUIPMENT

**Engineering measures:**

Local or general exhaust required in an enclosed area or when there is inadequate ventilation.

**Respiratory protection:**

Not required under normal conditions and adequate ventilation. Use atmosphere supplying respirators in confined spaces or when vapors exceed permissible limits; otherwise, an organic vapor respirator with pre-filter for fumes can be used. Self-contained breathing apparatus should be used for fire fighting.

**Skin and body protection:**

Impermeable gloves (e.g., nitrile, viton, tyvek/saranex 23) to prevent skin contact.

**Eye protection:**

Goggles and faceshield when handling hot material.

**Hygiene measures:**

Use mechanical ventilation equipment that is explosion-proof. Chemical resistant apron or other protective clothing may be needed to avoid skin contact.

## 9. PHYSICAL AND CHEMICAL PROPERTIES:

**Appearance:**

Light-dark, Brown Liquid

<b>Physical state (Solid/Liquid/Gas):</b>	Liquid
<b>Substance type (Pure/Mixture):</b>	Mixture
<b>Color:</b>	Light to dark brown.
<b>Odor:</b>	Hydrocarbon
<b>Molecular weight:</b>	Not determined.
<b>pH:</b>	Neutral
<b>Boiling point/range (5-95%):</b>	600-1000 F
<b>Melting point/range:</b>	Not determined.
<b>Decomposition temperature:</b>	Not applicable.
<b>Specific gravity:</b>	Not determined
<b>Density:</b>	7.4-7.8 lbs/gal
<b>Bulk density:</b>	No data available.
<b>Vapor density:</b>	No data available.
<b>Vapor pressure:</b>	1 mm Hg @ 160 F
<b>Evaporation rate:</b>	No data available.
<b>Solubility:</b>	Negligible
<b>Solubility in other solvents:</b>	No data available.
<b>Partition coefficient (n-octanol/water):</b>	No data available.
<b>VOC content(%):</b>	No data available.
<b>Viscosity:</b>	No data available.

## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	The material is stable at 70 F, 760 mm pressure.
<b>Polymerization:</b>	Will not occur.
<b>Hazardous decomposition products:</b>	Combustion produces carbon monoxide, aldehydes, aromatic and other hydrocarbons.
<b>Materials to avoid:</b>	Strong oxidizers such as nitrates, chlorates, peroxides.
<b>Conditions to avoid:</b>	Sources of heat or ignition.

## 11. TOXICOLOGICAL INFORMATION

**Acute toxicity:**

**Product information:**

Name	CAS Number	Inhalation:	Dermal:	Oral:
Marathon No. 5 Fuel Oil	Mixture	No data available	No data available	No data available



#### Summary of health effect data on No. 5 fuel oil components:

Lifetime skin painting studies in animals with products similar to Heavy catalytic cracked distillate, No. 6 fuel oil and/or its components have produced tumors in animals following prolonged and repeated skin contact. Repeated dermal application has produced severe irritation and systemic toxicity in subacute toxicity studies.

Lifetime skin painting studies in animals with similar distillate fuels have produced weak to moderate carcinogenic activity following prolonged and repeated exposure. Similar middle distillates, when tested at nonirritating dose levels, did not show any significant carcinogenic activity indicating that this tumorigenic response is likely related to chronic irritation and not to dose. Repeated dermal application has produced severe irritation and systemic toxicity in subacute toxicity studies. Some components of this product were found to be positive in some mutagenicity tests while negative in others. The exact relationship between these results and human health is not known.

This product may contain >0.1% naphthalene. Exposure to naphthalene at 30 ppm for two years caused lung tumors in female mice. Male mice with the same exposure did not develop tumors. Exposure to 10-60 ppm naphthalene for 2 years caused tumors in the tissue lining of the nose and respiratory tract in male and female rats. Oral administration of 133-267 mg/kg/day of naphthalene in mice for up to 90 days did not produce mortality, systemic toxicity, adversely affect organ or body weight or produce changes in blood. Repeated oral administration of naphthalene produced an anemia in dogs. Repeated intraperitoneal doses of naphthalene produced lung damage in mice. Repeated high doses of naphthalene has caused the formation of cataracts and retinotoxicity in the eyes of rats and rabbits due to accumulation of 1,2-naphthoquinone, a toxic metabolite. Effects in human eyes is uncertain and not well documented. Pregnant rats administered intraperitoneal doses of naphthalene during gestation gave birth to offspring that had delayed heart and bone development. Pregnant mice given near lethal doses of naphthalene showed no significant maternal toxicity and a reduction in the number of pups per litter, but no gross abnormalities in offspring. Suppressed spermatogenesis and progeny development have been reported in mice, rats and guinea pigs after exposure to high concentrations of naphthalene in their drinking water. Certain groups or individuals, i.e., infants, Semites, Arabs, Asians and Blacks, with a certain blood enzyme deficiency (glucose-6-phosphate dehydrogenase) are particularly susceptible to hemolytic agents and can rapidly develop hemolytic anemia and systemic poisoning from ingestion or inhalation of naphthalene.

Catalytic cracked slurry oil (CCSO) may be present in concentrations up to 70% in this product. Lifetime skin painting studies in animals with CCSO have produced tumors in animals following prolonged and repeated skin contact. Repeated dermal application of CCSO (30 mg/kg/day for 13 weeks) in rats resulted in anemia, liver degeneration and injury to bone marrow and lymphoid tissues. 100% mortality was observed at 2,000 mg/kg/day within three weeks. Repeated dermal application (30 mg/kg/day) of CCSO to pregnant rats during gestation produced maternal and fetal toxicity. Deaths and systemic toxicity (liver, thymus and blood). The number of viable offspring decreased at doses of 30 mg/kg/day and above. Many of the developmental effects (anomalies, resorptions and growth inhibition) were observed at doses which produced maternal toxicity. In a separate developmental study CCSO produced decreases in body weights and food consumption at doses from 10-250 mg/kg/day. Although fertility and reproductive function were not affected, the no observable adverse effect level for CCSO administered dermally was 1 mg/kg/day.

This product contains polynuclear aromatic hydrocarbons (PAC) at a level of >0.1%. Some PACs that have been identified in this product such as benzo(a)pyrene, benz(a)anthracene and indeno(1,2,3-cd)pyrene have been shown to be carcinogenic in experimental animals. An increased risk of cancer has been observed in workers employed in the aluminum production, coal gasification, coal-tar pitch, coke production and iron and steel industries that had been occupationally exposed to polynuclear aromatic hydrocarbons. Since these kinds of PACs have been measured at high levels in air samples taken in these industries, The International Agency for Research on Cancer (IARC) has concluded that these PACs are probably carcinogenic to humans.

Hydrogen sulfide gas (H<sub>2</sub>S) is toxic by inhalation. Prolonged breathing of 50-100 ppm H<sub>2</sub>S vapors can produce eye and respiratory tract irritation. Higher concentrations (250-600 ppm) for 15-30 minutes can produce headache, dizziness, nervousness, nausea and pulmonary edema or bronchial pneumonia. Concentrations of >1000 ppm will cause immediate unconsciousness and death through respiratory paralysis. Rats and mice exposed to 80 ppm H<sub>2</sub>S, 6 hrs/day, 5 days/week for 10 weeks, did not produce any toxicity except for irritation of nasal passages. H<sub>2</sub>S did not affect reproduction and development (birth defects or neurotoxicity) in rats exposed to concentrations of 75-80 ppm or 150 ppm H<sub>2</sub>S, respectively. Over the years a number of acute cases of H<sub>2</sub>S poisonings have been reported. Complete and rapid recovery is the general rule. However, if the exposure was sufficiently intense and sustained causing cerebral hypoxia (lack of oxygen to the brain), neurologic effects such as amnesia, intention tremors or brain damage are possible.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects:

Product can be toxic to fish and aquatic life. The 24 hour TLM of the water soluble fraction of bunker C fuel oil is 3-6 ppm in marine and estuarine crustaceans and fish.

## 13. DISPOSAL CONSIDERATIONS

### Cleanup Considerations:

This material as supplied and by itself, when discarded or disposed of, is not an EPA RCRA hazardous waste according to federal regulations. This material could become a hazardous waste if mixed or contaminated with a hazardous waste or other substance(s). It is the responsibility of the user to determine if disposal material is hazardous according to federal, state and local regulations.

## 14. TRANSPORT INFORMATION

49 CFR 172.101:

### DOT:

**Transport Information:** This material when transported via US commerce would be regulated by DOT Regulations.

<b>Proper shipping name:</b>	Fuel Oil, No. 5
<b>UN/Identification No:</b>	NA 1993
<b>Hazard Class:</b>	3
<b>Packing group:</b>	III
<b>DOT reportable quantity (lbs):</b>	Not applicable.

### TDG (Canada):

<b>Proper shipping name:</b>	Fuel Oil, No. 5
<b>UN/Identification No:</b>	NA 1993
<b>Hazard Class:</b>	3
<b>Packing group:</b>	III
<b>Regulated substances:</b>	Not applicable.

## 15. REGULATORY INFORMATION

### Federal Regulatory Information:

**US TSCA Chemical Inventory Section 8(b):** This product and/or its components are listed on the TSCA Chemical Inventory.

**OSHA Hazard Communication Standard:** This product has been evaluated and determined to be hazardous as defined in OSHA's Hazard Communication Standard.

### EPA Superfund Amendment & Reauthorization Act (SARA):

**SARA Section 302:** This product contains the following component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Catalytic Cracked Clarified Oil	NA
No. 6 Fuel Oil	NA
Middle Distillate Fuel	NA
Petroleum Residua	NA
Sulfur Compounds	NA
Naphthalene	NA
Hydrogen Sulfide	hydrogen sulfide

**SARA Section 304:**

This product contains the following component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	CERCLA/SARA - Hazardous Substances and their Reportable Quantities
Catalytic Cracked Clarified Oil	NA
No. 6 Fuel Oil	NA
Middle Distillate Fuel	NA
Petroleum Residua	NA
Sulfur Compounds	NA
Naphthalene	= 0.454 kg final RQ = 1 lb final RQ = 100 lb final RQ = 45.4 kg final RQ
Hydrogen Sulfide	= 100 lb final RQ = 45.4 kg final RQ

**SARA Section 311/312:**

The following EPA hazard categories apply to this product:

Acute Health Hazard  
Chronic Health Hazard  
Fire Hazard

**SARA Section 313:**

This product contains the following component(s) that may be subject to reporting on the Toxic Release Inventory (TRI) From R:

Name	CERCLA/SARA 313 Emission reporting:
Catalytic Cracked Clarified Oil	None
No. 6 Fuel Oil	None
Middle Distillate Fuel	None
Petroleum Residua	None
Sulfur Compounds	None
Naphthalene	= 0.1 % de minimis concentration
Hydrogen Sulfide	None

**State and Community Right-To-Know Regulations:**

The following component(s) of this material are identified on the regulatory lists below:

**Catalytic Cracked Clarified Oil**

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed

New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
<b>No. 6 Fuel Oil</b>	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
<b>Middle Distillate Fuel</b>	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	sn 2452
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
<b>Petroleum Residua</b>	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed

Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
<b>Sulfur Compounds</b>	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed.
Pennsylvania Right-To-Know:	Not Listed.
Massachusetts Right-To Know:	Not Listed.
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Not Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
<b>Naphthalene</b>	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Listed
New Jersey Right-To-Know:	Listed
Pennsylvania Right-To-Know:	Listed
Massachusetts Right-To Know:	Listed
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Listed
Michigan critical materials register list:	Not Listed.
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Listed
Illinois - Toxic Air Contaminants	Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Listed
<b>Hydrogen Sulfide</b>	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	sn 1017
Pennsylvania Right-To-Know:	environmental hazard
Massachusetts Right-To Know:	Extraordinarily hazardous
Florida substance List:	Not Listed.
Rhode Island Right-To-Know:	Toxic, Flammable
Michigan critical materials register list:	Not Listed.

Massachusetts Extraordinarily Hazardous Substances:	extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 1017
Illinois - Toxic Air Contaminants	Not Listed
New York - Reporting of Releases Part 597 -	= 100 lbs Air RQ
List of Hazardous Substances:	= 100 lbs Land/Water RQ

#### Canadian Regulatory Information:

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Name	Canada - WHMIS: Classifications of Substances:	Canada - WHMIS: Ingredient Disclosure:
Naphthalene	B4, D2A	1 %
Hydrogen Sulfide	A; B1; D1A; D2B	1% (English Item 851, French Item 1550)

### 16. OTHER INFORMATION

#### Additional Information:

The pronounced and easily-recognized rotten egg odor of hydrogen sulfide gas (H<sub>2</sub>S) can be detected at concentrations as low as 0.003-0.13 ppm. Since higher H<sub>2</sub>S concentrations (100-200 ppm) cause olfactory fatigue and other hydrocarbon odors can "mask" H<sub>2</sub>S, the sense of smell cannot be used as a reliable indicator of H<sub>2</sub>S exposure.

#### Prepared by:

Craig M. Parker Manager, Toxicology And Product Safety

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**End of Safety Data Sheet**

**Aero Promoter**



*Technology ahead of its time™*

MSDS: 0000301  
Date: 06/29/2005  
Supersedes: 07/01/1997

## MATERIAL SAFETY DATA SHEET

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **AERO® 407 Promoter, Aqueous**  
Synonyms: None  
Chemical Family: Formulated Dithiophosphate  
Molecular Formula: Mixture  
Molecular Weight: Mixture

CYTEC INDUSTRIES INC., FIVE GARRET MOUNTAIN PLAZA, WEST PATERSON, NEW JERSEY 07424, USA  
For Product Information call 1-800/652-6013. Outside the USA and Canada call 1-973/357-3193.  
EMERGENCY PHONE: For emergency involving spill, leak, fire, exposure or accident call CHEMTREC: 1-800/424-9300. Outside the USA and Canada call 1-703/527-3887.

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### 2. COMPOSITION/INFORMATION ON INGREDIENTS

#### OSHA REGULATED COMPONENTS

Component / CAS No.	% (w/w)	OSHA (PEL):	ACGIH (TLV)	Carcinogen
Sodium diisobutyl dithiophosphate 53378-51-1	6.93 - 11.55	Not established	Not established	-
Sodium hydroxide 1310-73-2	1.0	2 mg/m <sup>3</sup> (TWA)	2 mg/m <sup>3</sup> (Ceiling)	-
Sodium mercaptobenzothiazole 2492-26-4	23.45	Not established	Not established	-

### 3. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

##### APPEARANCE AND ODOR:

Color: yellow-green  
Appearance: liquid  
Odor: sulfur

##### STATEMENTS OF HAZARD:

DANGER! CAUSES BURNS OF EYES AND SKIN

##### POTENTIAL HEALTH EFFECTS



**EFFECTS OF EXPOSURE:**

The acute oral (rat) LD50 and dermal (rabbit) LD50 values are estimated to be 7800 mg/kg and >5000 mg/kg, respectively. The 4-hour inhalation (rat) LC50 value is estimated to be >10000 ppm. Direct contact with this material may cause severe eye and skin irritation. Contact with acid may cause liberation of hydrogen sulfide. Hydrogen sulfide has a strong rotten-egg odor, however, some people are unable to smell the gas and exposure will deaden the sense of smell. Therefore, odor is an unreliable indicator of exposure. Repeated or prolonged dermal contact with this material may cause severe allergic skin reactions. Such allergic reactions may be incapacitating for an extended period of time. Overexposure to hydrogen sulfide gas may cause severe eye or respiratory tract irritation, rapid development of coma and respiratory failure. Low levels of hydrogen sulfide may cause headache, dizziness, staggering gait, neurological damage and gastritis. Refer to Section 11 for toxicology information on the regulated components of this product.

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## 4. FIRST AID MEASURES

**Ingestion:**

Material is not expected to be harmful by ingestion. No specific first aid measures are required.

**Skin Contact:**

Take off immediately all contaminated clothing. Wear impermeable gloves. Wash immediately with plenty of water and soap. Pay particular attention to skin crevices, nail folds, etc. Do not reuse contaminated clothing without laundering. Do not reuse contaminated leatherware.

**Eye Contact:**

Rinse immediately with plenty of water for at least 15 minutes. Obtain medical attention immediately.

**Inhalation:**

Material is not expected to be harmful if inhaled. Remove to fresh air.

---

## 5. FIRE-FIGHTING MEASURES

**Extinguishing Media:**

Use water spray or fog, carbon dioxide or dry chemical.

**Protective Equipment:**

Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See MSDS Section 8 (Exposure Controls/Personal Protection).

**Special Hazards:**

Sulfur dioxide or hydrogen sulfide may be formed under fire conditions. Do not flush to sewer which may contain acid. This could result in generation of toxic and explosive hydrogen sulfide gas.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions:**

Where exposure level is not known, wear approved, positive pressure, self-contained respirator. Where exposure level is known, wear approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8, wear a two piece PVC suit with hood or PVC overalls with hood.

**Methods For Cleaning Up:**

Cover spills with some inert absorbent. Sweep up into containers for disposal. Flush spill area with water.

---

## 7. HANDLING AND STORAGE

### HANDLING

**Precautionary Measures:** Do not get in eyes, on skin or on clothing. Wash thoroughly after handling.

**Special Handling Statements:** This product should not be mixed with acids since evolution of toxic and explosive hydrogen sulfide gas could result. This precaution does not, of course, apply to addition of this reagent to flotation pulps in amounts customarily used in flotation.

### STORAGE

None

**Storage Temperature:** Room temperature

**Reason:** Integrity.

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Engineering Measures:

Utilize a closed system process where feasible. Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure.

### Respiratory Protection:

For operations where inhalation exposure can occur, use an approved respirator recommended by an industrial hygienist after an evaluation of the operation. Where inhalation exposure can not occur, no respiratory protection is required. A full facepiece respirator also provides eye and face protection.

### Eye Protection:

Prevent eye and skin contact. Provide eye wash fountain and safety shower in close proximity to points of potential exposure. Wear eye/face protection such as chemical splash proof goggles or face shield.

### Skin Protection:

Prevent contamination of skin or clothing when removing protective equipment. Wear impermeable gloves and suitable protective clothing.

### Additional Advice:

Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	yellow-green
Appearance:	liquid
Odor:	sulfur
Boiling Point:	103 °C      217 °F      Not applicable
Melting Point:	Not available
Vapor Pressure:	Not available
Specific Gravity:	1.165 @ 25 °C
Vapor Density:	Not available
Percent Volatile (% by wt.):	~64(water)
pH:	>12(minimum)
Saturation In Air (% By Vol.):	Not available
Evaporation Rate:	Not available
Solubility In Water:	Complete
Volatile Organic Content:	Not available
Flash Point:	>93 °C      200 °F      Setaflash Closed Cup
Flammable Limits (% By Vol):	Not available

<b>Autoignition Temperature:</b>	Not available
<b>Decomposition Temperature:</b>	Not available
<b>Partition coefficient (n-octanol/water):</b>	Not available
<b>Odor Threshold:</b>	Not available

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## 10. STABILITY AND REACTIVITY

<b>Stability:</b>	Stable
<b>Conditions To Avoid:</b>	None known
<b>Polymerization:</b>	Will not occur
<b>Conditions To Avoid:</b>	None known
<b>Materials To Avoid:</b>	Strong acids and/or oxidizing agents. Avoid contact with strong oxidizing agents and mineral acids.
<b>Hazardous Decomposition Products:</b>	carbon monoxide carbon dioxide oxides of sulfur (includes sulfur di and tri oxides) oxides of phosphorus

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## 11. TOXICOLOGICAL INFORMATION

Toxicological information for the product is found under Section 3. HAZARDS IDENTIFICATION. Toxicological information on the regulated components of this product is as follows:

Sodium diisobutyldithiophosphate has estimated acute oral (rat) and dermal (rabbit) LD50 values of greater than 5000 mg/kg and 2000 mg/kg, respectively. Direct contact with sodium diisobutyldithiophosphate can cause eye burns and skin corrosion.

Acute overexposure to sodium hydroxide mists or dusts causes severe respiratory irritation. A solution of sodium hydroxide can produce irreversible damage to eyes and skin.

Sodium mercaptobenzothiazole has acute oral (rat) and dermal (rabbit) LD50 values of 3.1 g/kg and >2.5 g/kg, respectively. Sodium mercaptobenzothiazole is a severe eye and skin irritant. The material can also cause allergic contact dermatitis.

---

## 12. ECOLOGICAL INFORMATION

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. This material is not readily biodegradable.

### FISH TEST RESULTS

**Test:** Acute toxicity, freshwater (OECD 203)  
**Duration:** 96 hr.      **Procedure:** Static renewal.  
**Species:** Bluegill Sunfish (*Lepomis macrochirus*)  
13.4 mg/l                      LC50

## DEGRADATION

**Test:** Closed Bottle (OECD 301D)

**Duration:** 28 day      **Procedure:** Ready biodegradability

<2.1 %

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## 13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the Cytec product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA 'listed hazardous waste' or has any of the four RCRA 'hazardous waste characteristics.' Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA 'listed hazardous waste'; information contained in Section 15 of this MSDS is not intended to indicate if the product is a 'listed hazardous waste.' RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this MSDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. Cytec encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. Cytec recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. Cytec has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

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## 14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

### US DOT

Proper Shipping Name: Caustic alkali liquid, n.o.s.  
Hazard Class: 8  
Packing Group: II  
UN/ID Number: UN1719  
Transport Label Required: Corrosive  
Technical Name (N.O.S.): Contains dithiophosphate salt  
Hazardous Substances:  
Not applicable

### TRANSPORT CANADA

Proper Shipping Name: Caustic alkali liquid, n.o.s.  
Hazard Class: 8  
Packing Group: II  
UN Number: 1719

Transport Label Required: Corrosive  
Technical Name (N.O.S.): Contains dithiophosphate salt

**ICAO / IATA**

Proper Shipping Name: Caustic alkali liquid, n.o.s.  
Hazard Class: 8  
Packing Group: II  
UN Number: 1719  
Transport Label Required: Corrosive  
Packing Instructions/Maximum Net Quantity Per Package:  
Passenger Aircraft: 809; 1L  
Cargo Aircraft: 813; 30L  
Technical Name (N.O.S.): Contains dithiophosphate salt

**IMO**

Proper Shipping Name: Caustic alkali liquid, n.o.s.  
Hazard Class: 8  
UN Number: 1719  
Packing Group: II  
Transport Label Required: Corrosive  
Technical Name (N.O.S.): Contains dithiophosphate salt

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**15. REGULATORY INFORMATION****INVENTORY INFORMATION**

**United States (USA):** All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical Inventory.

**Canada:** All components of this product are included on the Domestic Substances List (DSL) or are not required to be listed on the DSL.

**European Union (EU):** All components of this product are included on the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.

**Australia:** All components of this product are included in the Australian Inventory of Chemical Substances (AICS) or are not required to be listed on AICS.

**China:** All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.

**Japan:** All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese inventory.

**Korea:** All components of this product are included on the Korean (ECL) inventory or are not required to be listed on the Korean inventory.

**Philippines:** All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine inventory.

**OTHER ENVIRONMENTAL INFORMATION**

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

**PRODUCT HAZARD CLASSIFICATION UNDER SECTION 311 OF SARA**

- Acute

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## 16. OTHER INFORMATION

### NFPA Hazard Rating (National Fire Protection Association)

Health: 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

Fire: 1 - Materials that must be preheated before ignition can occur.

Reactivity: 0 - Materials that in themselves are normally stable, even under fire exposure conditions.

### Reasons For Issue:

Revised Section 15

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Randy Deskin, Ph.D., DABT +1-973-357-3100

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This information is given without any warranty or representation. We do not assume any legal responsibility for same, nor do we give permission, inducement, or recommendation to practice any patented invention without a license. It is offered solely for your consideration, investigation, and verification. Before using any product, read its label.

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Alum

# Material Safety Data Sheet - MSDS

**MARSULEX**

## Dry Alum

### Section 1. Chemical Product and Company Identification

Trade name : Dry Alum

Material Uses : Alum is used as a coagulating agent in municipal and industrial water and wastewater treatment and as an additive in papermaking.

Headquarters : Marsulex Inc.  
111 Gordon Baker Road  
Suite 300  
North York, ON  
M2H 3R1  
(416) 496-9655  
www.marsulex.com

Validation Date : 2004-11-18.

In Case of Emergency : Canada : CANUTEC 1-613-996-6666  
US : CHEMTREC: 1-800-424-9300

### Section 2. Composition, Information on Ingredients

Name	CAS #	% by Weight
Aluminum Sulfate Hydrate	16828-12-9	99

This material is classified hazardous under OSHA regulations in the United States and the WHMIS Controlled Product Regulation in Canada.

See Section 8 for Exposure Limits.  
See Section 11 for Toxicological Data.

### Section 3. Hazards Identification

Physical State and Appearance : Solid. (Granules or powder.)

Emergency Overview : WARNING!  
CAUSES EYE AND SKIN IRRITATION.  
MAY CAUSE ALLERGIC SKIN REACTION.  
Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

Routes of Entry : Dermal contact. Eye contact. Inhalation. Ingestion.

#### Potential Acute Health Effects

Eyes : The dust becomes acidic following contact with moisture in the eye and may result in moderate to severe irritation to eyes.

Skin : The dust becomes acidic following contact with moisture on the skin and mild to moderate irritation can occur. Aluminum is very poorly absorbed through the skin and toxic effects would not be expected following short-term skin contact. Prolonged and repeated exposure to dilute solutions may cause irritation, redness, pain and drying and cracking of the skin.

Inhalation : Dusts of aluminum sulfate hydrate probably cause irritation of the nose, throat and respiratory tract based on pH. The dust becomes acidic following contact with moisture in the air or tissues of the respiratory tract.

Ingestion : May cause irritation of the lining of the stomach. Ingestion is not a typical route of occupational exposure.

Potential Chronic Health Effects : **CARCINOGENIC EFFECTS:** Not classified or listed by IARC, NTP, OSHA, EU and ACGIH.  
**MUTAGENIC EFFECTS:** Not available.  
**TERATOGENIC EFFECTS:** Not available.

Medical Conditions Aggravated by Overexposure : Skin irritation may be aggravated in individuals with existing skin lesions. Breathing of dust may aggravate acute or chronic asthma and chronic pulmonary disease such as emphysema and bronchitis.

Over-exposure signs/symptoms : Prolonged or repeated contact with dust may cause redness, dryness and itching of the skin (dermatitis).

See Section 11 for Toxicological Data.

Continued on Next Page



## Section 4. First Aid Measures

- Eye Contact** : Immediately flush eyes with lukewarm, gently running water for a minimum of 5 minutes or until the chemical is removed. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY. Do not transport victim until the recommended flushing period is completed unless flushing can be continued during transport.
- Skin Contact** : Flush skin with lukewarm running water for a minimum of 5 minutes or until the chemical is removed. Start flushing while removing contaminated clothing. If irritation persists, repeat flushing and obtain medical attention. Do not transport victim unless the recommended flushing period is completed or flushing can be continued during transport.  
Discard heavily contaminated clothing and shoes in a manner, which limits further exposure. Otherwise, wash clothing separately before reuse.
- Inhalation** : Move victim to fresh air. If irritation persists, obtain medical attention immediately. Give artificial respiration ONLY if breathing has stopped. Give Cardiopulmonary Resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical attention IMMEDIATELY.
- Ingestion** : If irritation or discomfort occur, obtain medical advice immediately.
- Notes to Physician** : Not available.

## Section 5. Fire Fighting Measures

- Flammability of the Product** : Non-flammable.
- Auto-ignition Temperature** : Not applicable.
- Flash Points** : Not applicable.
- Flammable Limits** : Not applicable.
- Products of Combustion** : Forms aluminum oxide, sulfur dioxide and/or sulfur trioxide at temperatures reported above 650 °C (1200 °F).
- Fire Hazards in Presence of Various Substances** : Not applicable.
- Explosion Hazards in Presence of Various Substances** : Dry alum will dissolve in water to form sulfuric acid which reacts with some metals, especially when dilute, to give flammable, potentially explosive hydrogen gas. Hydrogen gas can accumulate to explosive concentrations inside confined spaces. Follow appropriate NFPA codes.
- Fire Fighting Media and Instructions** : Use appropriate extinguisher for surrounding material.
- Protective Clothing (Fire)** : The decomposition products are corrosive and hazardous to health. Wear a NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing if vapors or mists are present. For fighting fires in close proximity to spill or vapors, use acid-resistant personal protective equipment. Evacuate residents who are downwind of fire. Prevent unauthorized entry to fire area. Dike area to contain runoff and prevent contamination of water sources. Neutralize runoff with lime, soda ash or other suitable neutralizing agents (see Deactivating Chemicals, Section 6). Cool containers that are exposed to flame with streams of water until fire is out. Take care not to get water inside container.

## Section 6. Accidental Release Measures

- Small Spill and Leak** : Shovel into clean, dry, labelled containers and cover. Flush area with water. Do not get water inside containers or on spilled material.
- Large Spill and Leak** : Prevent solids from mixing with water or entering sewers or waterways. Shovel into clean, dry, labelled containers and cover. If liquid is present, dike with inert material (sand, earth, etc.). Consider in situ neutralization and disposal. Ensure adequate decontamination of tools and equipment following clean up. Comply with Federal, Provincial/State and local regulations on reporting releases. Deactivating Chemicals: Lime, limestone, soda ash, sodium bicarbonate, dilute sodium hydroxide, dilute aqua ammonia.

## Section 7. Handling and Storage

- Handling** : Dry Alum is an irritating solid. Avoid generating dusts. Do not breathe dusts. Do not ingest. Do not get in eyes, on skin or on clothing. Use proper tools when opening containers. Keep containers closed when not in use. Empty containers may contain hazardous residues. When there is a large-scale use, do not use in areas equipped with sprinkler systems. Post "DO NOT USE WATER" signs. Good housekeeping is important to prevent accumulations of dust. Dry sweeping is not recommended.
- Storage** : Keep container tightly closed. Keep container in a cool, dry, well-ventilated area. Store away from incompatible materials such as strong bases. Post warning signs.

Continued on Next Page

## Section 8. Exposure Controls, Personal Protection

**Engineering Controls** : Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. The most effective measures are the total enclosure of processes and the mechanization of handling procedures to prevent all personal contact. Use a corrosion resistant ventilation system separate from other exhaust ventilation systems.

### Personal Protection

**Eyes** : Splash goggles.

**Body** : Lab coat or coveralls.

**Respiratory** : NIOSH/MSHA approved dust mask, for dust concentrations of up to 10 mg/m<sup>3</sup>. Air-purifying respirator equipped with acid gas/fume, dust, mist cartridges for concentrations up to 20 mg/m<sup>3</sup>. An air-supplied respirator if concentrations are higher or unknown.

**Hands** : Gloves: Neoprene, PVC, vinyl or rubber.

**Feet** : Appropriate industrial footwear.

### Protective Clothing (Pictograms)



**Personal Protection in Case of a Large Spill** : Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist before handling this product.

### Exposure Limits

#### Product Name

Aluminum Sulfate Hydrate

#### Exposure Limits

##### ACGIH (TLV)

TWA: 2 mg/m<sup>3</sup> as Aluminium (soluble salts)

##### OSHA (PEL) (United States).

TWA: 2 mg/m<sup>3</sup> as Aluminium (soluble salts)

Consult local authorities for acceptable exposure limits.

## Section 9. Physical and Chemical Properties

**Physical State and Appearance** : Solid. (Granules or powder.)

**Color** : White.

**Odor** : Odorless.

**Molecular Weight** : 594.4 g/mole

**Molecular Formula** : Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> · 14 H<sub>2</sub>O

**pH** : > 2.9 @ 5%.

**Boiling/Condensation Point** : Not available.

**Melting/Freezing Point** : 86°C (186.8°F)

**Specific Gravity** : Not available.

**Vapor Pressure** : Not available.

**Vapor Density** : Not available.

**Odor Threshold** : Not available.

**Evaporation Rate** : Not available.

**LogK<sub>ow</sub>** : Not available.

**Solubility** : Solubility in water at 20 °C equivalent to approximately 8 wt-% Al<sub>2</sub>O<sub>3</sub>.

## Section 10. Stability and Reactivity

**Stability and Reactivity** : The product is stable.

**Incompatibility with Various Substances** : Strong bases such as sodium hydroxide. Reaction may be violent.

**Hazardous Decomposition Products** : Sulfuric acid vapors may be released upon heating and sulfur dioxide and sulfur trioxide may be released upon decomposition.

**Hazardous Polymerization** : Will not occur.

*Continued on Next Page*

## Section 11. Toxicological Information

### Toxicity Data

<u>Ingredient Name</u>	<u>Test</u>	<u>Result</u>	<u>Route</u>	<u>Species</u>
Aluminum Sulfate Hydrate	LD50	>9000 mg/kg	Oral	Rat
	LD50	>9000 mg/kg	Oral	Mouse

Chronic Effects on Humans : See Section 3.

Other Toxic Effects on Humans : Very hazardous in case of eye contact (irritant).  
Hazardous in case of skin contact (irritant).  
Slightly hazardous in case of inhalation (lung irritant).

## Section 12. Ecological Information

### Ecotoxicity Data

<u>Ingredient Name</u>	<u>Species</u>	<u>Period</u>	<u>Result</u>
Aluminum Sulfate Hydrate	Goldfish (LC50)	72 hour(s)	100 mg/l

Products of Degradation : These products are carbon and sulfur oxides (CO<sub>2</sub>, CO, SO<sub>3</sub> & SO<sub>4</sub>). Toxicity is primarily associated with acidic pH. Acidic soil conditions can develop with the material present leading to release of some trace metals.

Toxicity of the Products of Biodegradation : The products of biodegradation are more toxic than the original product.

## Section 13. Disposal Considerations

Waste Information : Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Consult your local or regional authorities.

## Section 14. Transport Information

Canada (TDG) : Not regulated.

United States (DOT) : RQ ENVIRONMENTALLY HAZARDOUS SUBSTANCES, SOLID, N.O.S. (Aluminum sulfate), 9, UN3077, PG III.

ERG : 171

## Section 15. Regulatory Information

WHMIS (Canada) : D-2B: Material causing other toxic effects (TOXIC).

DSL: Listed on inventory.

**This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.**

HCS Classification : Irritating material.

U.S. Federal Regulations : TSCA: Listed on inventory.

State Regulations :

California prop. 65: No products were found.

## Section 16. Other Information

### Hazardous Material Information System (U.S.A.)

Health	2
Fire Hazard	0
Reactivity	0
Personal Protection	C

### National Fire Protection Association (U.S.A.)

Health	Fire Hazard
0	Reactivity
	Specific Hazard

### References

- 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. ANSI Z400.1, MSDS Standard, 2001. -Canada Gazette Part II, Vol. 122, No. 2 Registration SOR/88-64 31 December, 1987 Hazardous Products Act "Ingredient Disclosure List".
- Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2002.
- Manufacturer's Material Safety Data Sheet.

Continued on Next Page

Responsible Name : Kemika XXI Inc. +1-450-435-7475

Date of Previous Issue : No Previous Validation.

Version : 1

**Notice to Reader**

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

**Amine D**

# Material Safety Data Sheet

Dehydroabietylamine, tech.

A # 13113

## Section 1 - Chemical Product and Company Identification

**MSDS Name:** Dehydroabietylamine, tech.

**Catalog Numbers:** AC147520000, AC147520050, AC147520500, AC147521000, AC147525000

**Synonyms:** 13-Isopropylpodocarpa-,8,11,13-Trien-15-amine

**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01

**For emergencies in the US, call CHEMTREC:** 800-424-9300

## Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
1446-61-3	Dehydroabietylamine (Aka, Amine D)	ca.100	215-899-7

## Section 3 - Hazards Identification

### EMERGENCY OVERVIEW

**Appearance:** pale yellow liquid.

**Warning!** Causes eye, skin, and respiratory tract irritation.

**Target Organs:** Respiratory system, eyes, skin.

#### Potential Health Effects

**Eye:** Causes eye irritation.

**Skin:** Causes skin irritation.

**Ingestion:** May cause gastrointestinal irritation with nausea, vomiting and diarrhea.

**Inhalation:** Causes respiratory tract irritation.

**Chronic:** No information found.

## Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

**Extinguishing Media:** Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** > 112 deg C (> 233.60 deg F)

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: ; Flammability: ; Instability:

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Use with adequate ventilation. Wash clothing before reuse.

**Storage:** Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Dehydroabietylamine	none listed	none listed	none listed

**OSHA Vacated PELs:** Dehydroabietylamine: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid  
**Appearance:** pale yellow  
**Odor:** Not available.  
**pH:** Not available.  
**Vapor Pressure:** Not available.  
**Vapor Density:** 9.84  
**Evaporation Rate:** Not available.  
**Viscosity:** Not available.  
**Boiling Point:** Not available.  
**Freezing/Melting Point:** Not available.  
**Decomposition Temperature:** Not available.  
**Solubility:** Not available.  
**Specific Gravity/Density:** Not available.  
**Molecular Formula:** C<sub>20</sub>H<sub>31</sub>N  
**Molecular Weight:** 285.46

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.  
**Conditions to Avoid:** Incompatible materials, excess heat, strong oxidants.  
**Incompatibilities with Other Materials:** Strong oxidizing agents.  
**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.  
**Hazardous Polymerization:** Has not been reported

## Section 11 - Toxicological Information

**RTECS#:**  
**CAS#** 1446-61-3: TP8701000  
**LD50/LC50:**  
Not available.  
**Carcinogenicity:**  
**CAS#** 1446-61-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.  
**Epidemiology:** No information available.  
**Teratogenicity:** No information available.  
**Reproductive Effects:** No information available.  
**Mutagenicity:** No information available.  
**Neurotoxicity:** No information available.  
**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** No data available. No information available.  
**Environmental:** No information found.  
**Physical:** No information found.  
**Other:** No information available.



## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	Not regulated as a hazardous material	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 1446-61-3 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

#### Section 313

No chemicals are reportable under Section 313.

#### Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

#### Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

#### STATE

CAS# 1446-61-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

#### California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

### European/International Regulations

**European Labeling in Accordance with EC Directives****Hazard Symbols:**

XI

**Risk Phrases:**

R 36/37/38 Irritating to eyes, respiratory system and skin.

**Safety Phrases:**

S 23 Do not inhale gas/fumes/vapour/spray.

S 28 After contact with skin, wash immediately with...

**WGK (Water Danger/Protection)**

CAS# 1446-61-3: No information available.

**Canada - DSL/NDSL**

CAS# 1446-61-3 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

Section 16 - Additional Information
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**MSDS Creation Date:** 4/05/1997**Revision #6 Date:** 3/15/2007

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*

Armeen T

# MATERIAL SAFETY DATA SHEET



Page:1  
DATE PREPARED: 7/26/2005  
MSDS No: 131100  
Tallow Amine

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier: Tallow Amine  
Product Description: Clear liquid with ammoniacal odor  
Chemical Family: Ether amine

### MANUFACTURER:

TOMAH Products  
1012 Terra Drive  
P. O. Box 388  
Milton, WI 53563  
Customer Service: (608) 868-6811

### 24 HR. EMERGENCY TELEPHONE

NUMBERS:  
CHEMTREC (800) 424-9300  
Emergency Phone (608) 868-6811

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	wt%	CAS Registry #
Amines, tallow alkyl (Aka, Ameen T)	97%	61790-33-8

## OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200)

### EXPOSURE LIMITS

Component	OSHA PEL	ACGIH TLV	Supplier
Amines, tallow alkyl	None Established	None Established	

## 3. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

#### IMMEDIATE CONCERNS:

Danger!  
Causes eye burns  
Causes skin burns  
Harmful by ingestion  
May cause respiratory tract irritation

# MATERIAL SAFETY DATA SHEET



Page:2  
DATE PREPARED: 7/26/2005  
MSDS No: 131100  
Tallow Amine

## POTENTIAL HEALTH EFFECTS

### EYES:

Corrosive. Will cause eye burns and permanent tissue damage;

### SKIN:

Corrosive; causes permanent skin damage

### INGESTION:

Corrosive to mouth, esophagus and stomach. Moderate toxicity if ingested.

### INHALATION:

Irritating to eyes and respiratory tract in high concentrations.

## 4. FIRST AID MEASURES

### EYES:

Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Get prompt medical attention.

### SKIN:

Immediately use soap and water to wash the affected area for at least 15 minutes. If dilute (3%) Acetic Acid solution is immediately available, use it to wash the affected area. If the skin remains greasy when touched, repeat the 3% Acetic Acid treatment followed by another soap and water washing. Avoid contact of the acid solution with eyes, genitals or open sores. Remove contaminated clothing and clean thoroughly before reuse.

Get prompt medical attention.

### INGESTION:

DO NOT induce vomiting. If individual is conscious, give milk or water to dilute stomach contents. Keep warm and quiet. Get prompt medical attention. DO NOT attempt to give anything by mouth to an unconscious person.

### INHALATION:

Using proper respiratory protection, immediately remove the affected victim from exposure. Administer artificial respiration if breathing is stopped. Keep at rest. Call for prompt medical attention.

## 5. FIRE FIGHTING MEASURES

Flashpoint and Method: >150°F Penskey-Marten CC

### HAZARDOUS COMBUSTION PRODUCTS:

Carbon Monoxide, Carbon Dioxide oxides of Nitrogen and ammonia may be produced.

### FIRE FIGHTING PROCEDURES:

Use water spray to cool fire exposed surfaces and to protect personnel. Isolate "fuel" supply from fire.

Use alcohol type foam, universal foam, dry chemical or water spray to extinguish fire.

### FLAMMABLE LIMIT:

Not available

### FIRE EXPLOSION:

Low Hazard, liquid can burn upon heating to temperatures at or above the flashpoint.

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"Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, properly bunged and promptly re- turned to a drum reconditioner, or properly disposed of.

SENSITIVE TO STATIC DISCHARGE:

No, but use proper grounding procedure

---

## 6. ACCIDENTAL RELEASE MEASURES

### ENVIRONMENTAL PRECAUTIONS:

#### WATER SPILL:

Remove from surface by skimming or with suitable adsorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in non-confined waters.

Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

#### LAND SPILL:

Eliminate sources of ignition. Prevent additional discharge of material, if possible to do so without hazard. For small spills implement cleanup procedures; for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to CERCLA reporting (see Section15) notify the National Response Center.

Prevent liquid from entering sewers, watercourses, or low areas. Contain spilled liquid with sand or earth. Recover by pumping or with a suitable absorbent.

Consult an expert on disposal of recovered material and ensure conformity to local disposal regulations.

---

## 7. HANDLING AND STORAGE

### GENERAL PROCEDURES:

Keep container closed. Handle and open containers with care. Store in a cool, well ventilated place away from incompatible materials.

Do NOT handle or store near an open flame, heat or other sources of ignition. Protect material from direct sunlight.

It is not known if this material is a static accumulator. Therefore, use proper grounding procedures.

Do NOT pressurize, cut, heat, or weld containers. Empty product containers may contain product residue. Do NOT reuse empty containers without commercial cleaning or reconditioning.

Storage Temperature: 60.0°F minimum to 160.0°F maximum

Loading Temperature: 12°F minimum to 180°F maximum

Loading/Unloading Viscosity: 3 to 10 cst

### STORAGE PRESSURE:

Atmospheric

---

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ELECTROSTATIC ACCUMULATION HAZARD:  
Unknown, use proper grounding procedure

## STORAGE

### MATERIALS AND COATINGS SUITABLE:

Stainless Steel

Carbon Steel

### MATERIALS AND COATINGS UNSUITABLE

Polypropylene

Polyethylene

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### ENGINEERING CONTROLS:

Ventilation should be provided to control worker exposures and prevent health risk.

### PERSONAL PROTECTION:

#### WORK HYGIENIC PRACTICES:

For open systems where contact is likely, wear long sleeves, chemical resistant gloves, and chemical goggles.

Where contact may occur, wear long sleeves and safety glasses with side shields.

Where overexposure by inhalation may occur and engineering, work practice or other means of exposure reduction are not adequate, approved respirators may be necessary.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid.

Odor: Ammoniacal.

Color: Yellow

Melting/Freezing Point: 40°C (104°F)

Vapor Pressure: <0.1 kPa (<1 mmHg) (at 20°C)

Solubility: Very slightly soluble in cold water.

Pour Point 35oC

Viscosity = 44.4SSU @ 45oC; 40.6SSU @ 55oC; 38.8SSU @ 65oC; 37.8SSU @ 75oC.

Density: 0.814 g/cm @ 38°C / 100.4°F

## 10. STABILITY AND REACTIVITY

STABLE: Yes

HAZARDOUS POLYMERIZATION: No

STABILITY:

Not applicable

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POLYMERIZATION:  
Not applicable

CONDITIONS TO AVOID:  
Avoid contact with strong acids and strong oxidizing agents.  
HAZARDOUS DECOMPOSITION:  
ammonia, propylamine, and volatile hydrocarbons  
INCOMPATIBLE MATERIALS  
Polyethylene and natural rubber

---

## 11. TOXICOLOGICAL INFORMATION

ORAL TOXICITY  
Oral LD50 (rat) = 1950 mg/kg

MUTAGENIC EFFECTS: Non-mutagenic for bacteria and/or yeast.

CHRONIC EFFECTS ON HUMANS:  
Amines, tallow alkyl: Chromosomal (DNA) abnormalities will not occur in CHO mammalian cell assay, the In Vivo Cytogenetics Assay in mice, the CHO/HGPRT mammalian cell assay and the Mouse Lymphoma Assay; based on a similar material.

SKIN EFFECTS:  
Corrosive to the skin.

---

## 12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:  
This product is expected to have aquatic toxicity less than 1 ppm based on testing of similar products.

ENVIRONMENTAL FATE:  
This product is expected to be inherently biodegradable based on the following test data:  
55% @ 28 day(s) CBT. 72% @ 42 days

---

## 13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:  
Dispose of in accordance with federal, state and local regulations.  
If disposed of this product would not be considered a hazardous waste.

---



# MATERIAL SAFETY DATA SHEET



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---

## 14. TRANSPORT INFORMATION

DOT (DEPARTMENT OF TRANSPORTATION)  
Proper Shipping Name: AMINES, LIQUID CORROSIVE, N.O.S.  
Technical Name: Fatty Amine  
Hot Hazard: No  
Combustible Class: No  
Hazard Class: 8  
NA/UN Number: UN 2735  
Packing Group: III

INTERNATIONAL (I.M.O.)  
Proper Shipping Name: Amines, liquid, corrosive, n.o.s.  
Marine Pollutant: No  
ADR/RID Hazard Classification: 8

AIR (I.C.A.O.)  
Proper Shipping Name: Amines, liquid, corrosive, n.o.s.

---

## 15. REGULATORY INFORMATION

### UNITED STATES

#### SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

311/312 Hazard Categories: Under the provisions of Title III, Sections 311/312 of the Superfund Amendments and Reauthorization Act (SARA) this product is classified into the hazards listed below:

Fire: No Pressure Generating: No Reactivity: No Acute: Yes Chronic: No

313 Reportable Ingredients: This product does not contain any ingredients reportable under Section 313.

#### CERCLA (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

If this product is accidentally spilled, it is not subject to any special reporting under the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). We recommend you contact local authorities to determine if there may be other local reporting requirements.

#### TSCA (TOXIC SUBSTANCE CONTROL ACT)

TSCA Status: Components of this product are listed on the TSCA Inventory

WHIMIS: Class E Corrosive

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EC Symbols	C Corrosive N Dangerous for the environment.
EC Risk Phrases	R34 Causes burns R22 Harmful if swallowed R50/53 Very toxic to aquatic organisms. May cause long term adverse effects in the aquatic environment
EC Safety Phrases	S24/25 Avoid contact with skin and eyes S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S27/28 After contact with skin, take off immediately all contaminated clothing and wash immediately with plenty of soap and water S36/37/39 Wear suitable protective clothing, gloves and eye/face protection. S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

This product is listed on the following international inventories:

- US TSCA
- Canadian DSL
- European EINECS
- Australian
- Japan
- Korean
- Philippine

## STATE REGULATIONS

### PROPOSITION 65 STATEMENT:

This product contains the following levels of compounds found by the State of California to cause cancer.

Nickel <10 ppm

### GENERAL COMMENTS:

PROTECTION OF STRATOSPHERIC OZONE (PURSANT TO SECTION 622 OF THE CLEAN AIR ACT AMMENDMENTS OF 1990):

Per 40 CFR Part 82, this product does not contain nor was it directly manufactured with any Class I or Class II ozone depleting substances.

## 16. OTHER INFORMATION

Approval date: 7.26.2005

# MATERIAL SAFETY DATA SHEET



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## NFPA CODES

Fire: 1 Health 3 Reactivity: 0

## HMIS CODES

Fire: 1 Health: 3 Reactivity: 0

## MANUFACTURER DISCLAIMER:

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as to its accuracy, reliability or completeness. It is the users responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer warranty against patent infringement.

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**Caustic Soda**



# Safety data for sodium hydroxide



Click here for data on sodium hydroxide in [student-friendly format](#), from the [HSci](#) project

[Glossary](#) of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

## General

Synonyms: caustic soda, soda lye, lye, white caustic, aetznatron, ascarite, Collo-Grillrein, Collo-Tapetta, sodium hydrate, fotofoil etchant, NAOH, STCC 4935235, sodium hydroxide pellets, Lewis red devil lye  
Molecular formula: NaOH  
CAS No: 1310-73-2  
EC No: 215-185-5  
Annex I Index No: 011-002-00-6

## Physical data

Appearance: odourless white solid (often sold as pellets)  
Melting point: 318 C  
Boiling point: 1390 C  
Vapour density:  
Vapour pressure: 1 mm Hg at 739 C  
Specific gravity: 2.12  
Flash point: n/a  
Explosion limits: n/a  
Autoignition temperature:  
Water solubility: High (Note: dissolution in water is highly exothermic)

## Stability

Stable. Incompatible with a wide variety of materials including many metals, ammonium compounds, cyanides, acids, nitro compounds, phenols, combustible organics. [Hygroscopic](#). Heat of solution is very high and may lead to a dangerously hot solution if small amounts of

water are used. Absorbs carbon dioxide from the air.

## Toxicology

Very corrosive. Causes severe burns. May cause serious permanent eye damage. Very harmful by ingestion. Harmful by skin contact or by inhalation of dust. Typical TLV 2 mg m<sup>-1</sup>.

### Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

IPR-MUS LD50 40 mg kg<sup>-1</sup>

### Irritation data

(The meaning of any abbreviations which appear in this section is given here.)

EYE-MKY 1%/24h sev

SKN-RBT 500 mg/24h sev

EYE-RBT 1% sev

### Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

R35.

## Transport information

The meaning of any UN hazard codes which appear in this section is given here.)

Hazard class 8.0. Packing group II. UN No 1823. EMS No 8.0-06.

## Personal protection

Safety glasses, adequate ventilation, Neoprene or PVC gloves.

### Safety phrases

(The meaning of any safety phrases which appear in this section is given here.)

S26 S37 S39 S45.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page](#).]

This information was last updated on February 17, 2006. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

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MSDS Number: S4034 \* \* \* \* \* Effective Date: 05/04/07 \* \* \* \* \* Supercedes: 07/07/04

MSDS

Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865

Mallinckrodt  
CHEMICALS

J.T.Baker

24 Hour Emergency Telephone: 800-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-096-6666

Outside U.S. and Canada  
Chemtec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# SODIUM HYDROXIDE

## 1. Product Identification

**Synonyms:** Caustic soda; lye; sodium hydroxide solid; sodium hydrate  
**CAS No.:** 1310-73-2  
**Molecular Weight:** 40.00  
**Chemical Formula:** NaOH  
**Product Codes:**  
J.T. Baker: 1508, 3717, 3718, 3721, 3722, 3723, 3728, 3734, 3736, 5045, 5565  
Mallinckrodt: 7001, 7680, 7708, 7712, 7772, 7798

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Hydroxide	1310-73-2	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CAUSES BURNS TO ANY AREA OF CONTACT. REACTS WITH WATER, ACIDS AND OTHER MATERIALS.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)  
-----

Health Rating: 4 - Extreme (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 2 - Moderate

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White Stripe (Store Separately)

  
-----**Potential Health Effects**  
-----**Inhalation:**

Severe irritant. Effects from inhalation of dust or mist vary from mild irritation to serious damage of the upper respiratory tract, depending on severity of exposure. Symptoms may include sneezing, sore throat or runny nose. Severe pneumonitis may occur.

**Ingestion:**

Corrosive! Swallowing may cause severe burns of mouth, throat, and stomach. Severe scarring of tissue and death may result. Symptoms may include bleeding, vomiting, diarrhea, fall in blood pressure. Damage may appear days after exposure.

**Skin Contact:**

Corrosive! Contact with skin can cause irritation or severe burns and scarring with greater exposures.

**Eye Contact:**

Corrosive! Causes irritation of eyes, and with greater exposures it can cause burns that may result in permanent impairment of vision, even blindness.

**Chronic Exposure:**

Prolonged contact with dilute solutions or dust has a destructive effect upon tissue.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:**

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Note to Physician:**

Perform endoscopy in all cases of suspected sodium hydroxide ingestion. In cases of severe esophageal corrosion, the use of therapeutic doses of steroids should be considered. General supportive measures with continual monitoring of gas exchange, acid-base balance, electrolytes, and fluid intake are also required.



---

## 5. Fire Fighting Measures

### Fire:

Not considered to be a fire hazard. Hot or molten material can react violently with water. Can react with certain metals, such as aluminum, to generate flammable hydrogen gas.

### Explosion:

Not considered to be an explosion hazard.

### Fire Extinguishing Media:

Use any means suitable for extinguishing surrounding fire. Adding water to caustic solution generates large amounts of heat.

### Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Do not flush caustic residues to the sewer. Residues from spills can be diluted with water, neutralized with dilute acid such as acetic, hydrochloric or sulfuric. Absorb neutralized caustic residue on clay, vermiculite or other inert substance and package in a suitable container for disposal.

US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Always add the caustic to water while stirring; never the reverse. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product. Do not store with aluminum or magnesium. Do not mix with acids or organic materials.

---

## 8. Exposure Controls/Personal Protection

### Airborne Exposure Limits:

- OSHA Permissible Exposure Limit (PEL):  
2 mg/m<sup>3</sup> Ceiling
- ACGIH Threshold Limit Value (TLV):  
2 mg/m<sup>3</sup> Ceiling

### Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the

contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

White, deliquescent pellets or flakes.

**Odor:**

Odorless.

**Solubility:**

111 g/100 g of water.

**Specific Gravity:**

2.13

**pH:**

13 - 14 (0.5% soln.)

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

1390C (2534F)

**Melting Point:**

318C (604F)

**Vapor Density (Air=1):**

> 1.0

**Vapor Pressure (mm Hg):**

Negligible.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Very hygroscopic. Can slowly pick up moisture from air and react with carbon dioxide from air to form sodium carbonate.

**Hazardous Decomposition Products:**

Sodium oxide. Decomposition by reaction with certain metals releases flammable and explosive hydrogen gas.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Sodium hydroxide in contact with acids and organic halogen compounds, especially trichloroethylene, may causes violent reactions. Contact with nitromethane and other similar nitro compounds causes formation of shock-sensitive salts. Contact with metals such as aluminum, magnesium, tin, and zinc cause formation of flammable hydrogen gas. Sodium hydroxide, even in fairly dilute solution, reacts readily with various sugars to produce carbon monoxide. Precautions should be taken including monitoring the tank atmosphere for carbon monoxide to ensure safety of personnel before vessel entry.

**Conditions to Avoid:**

Moisture, dusting and incompatibles.

---

## 11. Toxicological Information

Irritation data: skin, rabbit: 500 mg/24H severe; eye rabbit: 50 ug/24H severe; investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
-----			
Sodium Hydroxide (1310-73-2)	No	No	None

---

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

---

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

---

## 14. Transport Information

**Domestic (Land, D.O.T.)**

-----  
**Proper Shipping Name:** SODIUM HYDROXIDE, SOLID

**Hazard Class: 8**  
**UN/NA: UN1823**  
**Packing Group: II**  
**Information reported for product/size: 300LB**

**International (Water, I.M.O.)**

**Proper Shipping Name: SODIUM HYDROXIDE, SOLID**  
**Hazard Class: 8**  
**UN/NA: UN1823**  
**Packing Group: II**  
**Information reported for product/size: 300LB**

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Sodium Hydroxide (1310-73-2)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	DSL	NDSL	Phil.
Sodium Hydroxide (1310-73-2)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-	-----SARA 313-----		
	RQ	TPQ	List	Chemical Catg.
Sodium Hydroxide (1310-73-2)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Sodium Hydroxide (1310-73-2)	1000	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: No      Fire: No      Pressure: No  
 Reactivity: Yes      (Pure / Solid)

**Australian Hazchem Code: 2R**

**Poison Schedule: S6**

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **3** Flammability: **0** Reactivity: **1**

**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CAUSES BURNS TO ANY AREA OF CONTACT. REACTS WITH WATER, ACIDS AND OTHER MATERIALS.

**Label Precautions:**

Do not get in eyes, on skin, or on clothing.

Do not breathe dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)



# Material Safety Data Sheet



## 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

Page: 1

24-Hour Emergency Phone Number: 989-636-4400

Product: DOWFROTH\* 250 FLOTATION FROTHER

Product Code: 23586

Effective Date: 02/19/02      Date Printed: 12/26/02      MSD: 002010

The Dow Chemical Company, Midland, MI 48674

Customer Information Center: 800-258-2436

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Propylene oxide methanol adduct	CAS# 037286-64-9	99%
Potassium hydroxide	CAS# 001310-58-3	1%

## 3. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

\*\*\*\*\*  
\*  
\* Yellow to dark brown liquid. Low odor. Causes eye burns. \*  
\*  
\*\*\*\*\*

### POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

**EYE:** Due to the pH of the material, it is assumed that exposure may cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness.

**SKIN:** Short single exposure not likely to cause significant skin irritation. Prolonged or repeated exposure may cause moderate skin irritation. May cause more severe response if confined to skin or skin is abraded (scratched or cut). Prolonged or repeated exposure to very large amounts of component(s) in this mixture may cause narcosis (drowsiness).

**INGESTION:** Single dose oral toxicity is considered to be low. Small amounts swallowed incidental to normal handling operations are not likely to cause injury; swallowing amounts larger than that may cause injury. Observations in animals include tremors and convulsions.

(Continued on page 2 , over)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

Product: DOWFROTH\* 250 FLOTATION FROTHER  
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INHALATION: At room temperature, vapors are minimal due to physical properties; a single exposure is not likely to be hazardous. If material is heated or mist is produced, concentrations may be attained that are sufficient to cause respiratory irritation and other effects. Signs and symptoms of excessive exposure may be anesthetic or narcotic effects.

SYSTEMIC (OTHER TARGET ORGAN) EFFECTS: Signs and symptoms of excessive exposure may be anesthetic or narcotic effects.

TERATOLOGY (BIRTH DEFECTS): Contains component(s) which did not cause birth defects in laboratory animals.

#### 4. FIRST AID

EYE: Wash eyes immediately and continuously for 30 minutes. Seek medical attention immediately. Wash eyes enroute if possible.

SKIN: Wash off in flowing water or shower.

INGESTION: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

INHALATION: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

NOTE TO PHYSICIAN: Eye irrigation may be necessary for an extended period of time to remove as much caustic as possible. Duration of irrigation and treatment is at the discretion of medical personnel. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

#### 5. FIRE FIGHTING MEASURES

##### FLAMMABLE PROPERTIES

FLASH POINT: 300F, 149C

METHOD USED: Setaflash

AUTOIGNITION TEMPERATURE: Not determined.

##### FLAMMABILITY LIMITS

LFL: Not determined.

(Continued on page 3)

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UFL: Not determined.

HAZARDOUS COMBUSTION PRODUCTS: Under fire conditions polymers decompose. The smoke may contain polymer fragments of varying compositions in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to: carbon monoxide and carbon dioxide.

OTHER FLAMMABILITY INFORMATION: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids. Spills of these organic liquids on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

EXTINGUISHING MEDIA: Water fog or fine spray, carbon dioxide, dry chemical, foam. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively. Do not use direct water stream. Will spread fire.

MEDIA TO BE AVOIDED: Do not use direct water stream.

FIRE FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Burning liquids may be extinguished by dilution with water. Do not use direct water stream. May spread fire.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

#### 6. ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Clear non-emergency personnel from area.

PROTECT THE ENVIRONMENT: Contain liquid to prevent contamination of soil, surface water or ground water.

CLEANUP: Soak up with suitable, non-reactive absorbent material. Collect into suitable containers for disposal.

#### 7. HANDLING AND STORAGE

(Continued on page 4 , over)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

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HANDLING: Avoid contact with vapors from head space of containers.

STORAGE: To avoid uncontrolled emissions vent vapor from container to storage tank.

#### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guideline.

##### PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION: Use chemical goggles. Eye wash fountain should be located in immediate work area.

SKIN PROTECTION: When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific items such as faceshield, gloves, boots, apron, or full-body suit will depend on operation. If hands are cut or scratched, use gloves impervious to this material even for brief exposures.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. For most conditions, no respiratory protection should be needed; however, if material is heated or sprayed, use an approved air-purifying respirator.

EXPOSURE GUIDELINE(S): Dipropylene glycol methyl ether: ACGIH TLV and OSHA PEL are 100 ppm TWA, 150 ppm STEL.

Potassium hydroxide: ACGIH TLV and OSHA PEL are 2 mg/m3 Ceiling.

PELs are in accord with those recommended by OSHA, as in the 1989 revision of PELs.

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Yellow to dark brown liquid.

ODOR: Not available.

VAPOR PRESSURE: <0.01 mmHg @ 20C

VAPOR DENSITY: Low

BOILING POINT: 473F, 245C

SOLUBILITY IN WATER: Completely miscible.

(Continued on page 5)

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SPECIFIC GRAVITY: 0.98 25/25

#### 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable under recommended storage conditions.  
See Storage Section.

CONDITIONS TO AVOID: None known.

INCOMPATIBILITY WITH OTHER MATERIALS: Avoid contact with  
oxidizing materials.

HAZARDOUS DECOMPOSITION PRODUCTS: None known.

HAZARDOUS POLYMERIZATION: Will not occur.

#### 11. TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

SKIN: The dermal LD50 has not been determined.

INGESTION: The oral LD50 for rats is between 1260 - 2520 mg/kg.

MUTAGENICITY: In vitro mutagenicity studies were negative for  
component(s) tested.

#### 12. ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

##### ENVIRONMENTAL FATE

MOVEMENT & PARTITIONING: Log octanol/water partition coefficient (log Pow) is estimated to be low. Based largely or completely on information for similar material.

DEGRADATION & PERSISTENCE: 20-Day biochemical oxygen demand (BOD20) is 0.18 p/p. Biodegradation under aerobic static laboratory conditions is low (BOD20 or BOD28/ThOD between 2.5 and 10%)

ECOTOXICITY: Acute LC50 for fathead minnow (*Pimephales promelas*) is > 100 mg/L. Material is practically non-toxic to fish on an acute basis (LC50 greater than 100 mg/L).

#### 13. DISPOSAL CONSIDERATIONS (See Section 15 for Regulatory Information)

(Continued on page 6 , over)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

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DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: recycler, reclaimer, incinerator or other thermal destruction device.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Center at 800-258-2436 or 989-832-1556 for further details.

#### 14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (D.O.T.): For D.O.T. regulatory information, if required, consult transportation regulations, product shipping papers or contact your Dow representative.

#### 15. REGULATORY INFORMATION (Not meant to be all-inclusive--selected regulations represented)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

#### U.S. REGULATIONS

=====

(Continued on page 7)

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## REGULATORY INFORMATION (CONTINUED)

SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

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SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard  
A delayed health hazard

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## TOXIC SUBSTANCES CONTROL ACT (TSCA):

All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

-----

STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
POTASSIUM HYDROXIDE	001310-58-3	NJ1 NJ3 PA1 PA3
DIPROPYLENE GLYCOL METHYL ETHER	034590-94-8	NJ3 PA1

NJ1=New Jersey Special Health Hazard Substance (present at greater than or equal to 0.1%).

NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).

PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).

PA3=Pennsylvania Environmental Hazardous Substance (present at greater than or equal to 1.0%).

(Continued on page 8 , over)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

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## REGULATORY INFORMATION (CONTINUED)

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STATE RIGHT-TO-KNOW: This product is not known to contain any substances subject to the disclosure requirements of

New Jersey  
Pennsylvania

-----

## OSHA HAZARD COMMUNICATION STANDARD:

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## 16. OTHER INFORMATION

MSDS STATUS: Section 15 Canadian regulations removed.

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY  
The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.

**Ferric Sulfate**

MSDS Number: **F1368** \* \* \* \* *Effective Date: 01/19/06* \* \* \* \* *Supersedes: 08/10/04***MSDS****Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 800-859-2151  
CHEMTREC: 1-800-424-6300

National Response in Canada  
CANUTEC: 613-496-6666

Outside U.S. and Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# FERRIC SULFATE

## 1. Product Identification

**Synonyms:** Iron (III) sulfate; iron persulfate; sulfuric acid, iron (3+) salt (3:2) hydrate

**CAS No.:** 10028-22-5 (Anhydrous); 15244-10-7 (Hydrated)

**Molecular Weight:** 399.87

**Chemical Formula:**  $\text{Fe}_2(\text{SO}_4)_3 \cdot x\text{H}_2\text{O}$

**Product Codes:**

J.T. Baker: 2046

Mallinckrodt: 5036

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ferric Sulfate	10028-22-5	70 - 80%	Yes
Water	7732-18-5	20 - 30%	No

## 3. Hazards Identification

### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER.**



**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)  
-----

Health Rating: 3 - Severe (Life)

Flammability Rating: 0 - None

Reactivity Rating: 0 - None

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

  
-----**Potential Health Effects**  
-----**Inhalation:**

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

**Ingestion:**

Low toxicity in small quantities but larger dosages may cause nausea, vomiting, diarrhea, and black stool. Pink urine discoloration is a strong indicator of iron poisoning. Liver damage, coma, and death from iron poisoning has been recorded.

**Skin Contact:**

Causes irritation to skin. Symptoms include redness, itching, and pain. May cause skin discoloration with irritation.

**Eye Contact:**

Causes irritation, redness, and pain.

**Chronic Exposure:**

Prolonged exposure of the eyes may cause discoloration. Repeated high exposure could cause too much iron to build up in the body. Symptoms of upset stomach, nausea, constipation and black bowel movements may occur. Chronic exposure may cause liver effects.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

  
-----

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

  
-----

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Dry chemical, foam, carbon dioxide, or water spray.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. For ferric chloride anhydrous: US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed light-resistant container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-ACGIH Threshold Limit Value (TLV):

1 mg/m<sup>3</sup> (TWA) soluble iron salt as Fe

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Maintain eye wash fountain and quick-drench facilities in work area. Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible.

---

## 9. Physical and Chemical Properties

**Appearance:**

Grayish-white powder or rhombic crystals.

**Odor:**

Odorless.

**Solubility:**

Soluble in water.

**Density:**

3.097 (Anhydrous)

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

Not applicable.

**Melting Point:**

480C (896F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Very hygroscopic.

**Hazardous Decomposition Products:**

Oxides of sulfur and the contained metal.

**Hazardous Polymerization:**

This substance does not polymerize.

**Incompatibilities:**

No incompatibility data found.

**Conditions to Avoid:**

Heat, light, moisture.

---

## 11. Toxicological Information

Oral rat LD50: 500 mg/kg. Investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ferric Sulfate (10028-22-5)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

### Environmental Fate:

No information found.

### Environmental Toxicity:

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Ferric Sulfate (10028-22-5)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Ferric Sulfate (10028-22-5)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.

Ferric Sulfate (10028-22-5)	No	No	No	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
		-RCRA-	-TSCA-
Ingredient	CERCLA	261.33	8 (d)
-----	-----	-----	-----
Ferric Sulfate (10028-22-5)	1000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
Reactivity: No      (Mixture / Solid)

**Australian Hazchem Code:** None allocated.  
**Poison Schedule:** None allocated.  
**WHMIS:**  
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 0 Reactivity: 0  
**Label Hazard Warning:**  
WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER.  
**Label Precautions:**  
Avoid contact with eyes, skin and clothing.  
Wash thoroughly after handling.  
Avoid breathing dust.  
Keep container closed.  
Use only with adequate ventilation.  
**Label First Aid:**  
In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In all cases, get medical attention.  
**Product Use:**  
Laboratory Reagent.  
**Revision Information:**  
MSDS Section(s) changed since last revision of document include: 3, 11.

**Disclaimer:**  
\*\*\*\*\*

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\*\*\*\*\*

Prepared by: Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)



MSDS Number: **F1802** \* \* \* \* \* Effective Date: 05/04/07 \* \* \* \* \* Supercedes: 08/23/04**MSDS****Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



Mallinckrodt  
CHEMICALS



24 Hour Emergency Telephone: 800-859-2181  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-4666

Outside U.S. and Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# FERROUS SULFATE

## 1. Product Identification

**Synonyms:** Iron (II) sulfate (1:1)c; sulfuric acid, iron (2+) salt (1:1), heptahydrate

**CAS No.:** 7720-78-7 (Anhydrous) 7782-63-0 (heptahydrate)

**Molecular Weight:** 278

**Chemical Formula:** FeSO<sub>4</sub> 7H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 2063, 2070, 2074

Mallinckrodt: 5055, 5056, 5401, 5572

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ferrous Sulfate	7720-78-7	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER.**



**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Life)  
Flammability Rating: 0 - None  
Reactivity Rating: 1 - Slight  
Contact Rating: 2 - Moderate  
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES  
Storage Color Code: Green (General Storage)

**Potential Health Effects**

**Inhalation:**

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

**Ingestion:**

Low toxicity in small quantities but larger dosages may cause nausea, vomiting, diarrhea, and black stool. Pink urine discoloration is a strong indicator of iron poisoning. Liver damage, coma, and death from iron poisoning has been recorded. Smaller doses are much more toxic to children.

**Skin Contact:**

Causes irritation to skin. Symptoms include redness, itching, and pain.

**Eye Contact:**

Causes irritation, redness, and pain.

**Chronic Exposure:**

Severe or chronic ferrous sulfate poisonings may damage blood vessels. Large chronic doses cause rickets in infants. Chronic exposure may cause liver effects. Prolonged exposure of the eyes may cause discoloration.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

**4. First Aid Measures**

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**5. Fire Fighting Measures**

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

Use protective clothing and breathing equipment appropriate for the surrounding fire.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8.

Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

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## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Maintain a constant temperature not to exceed 24 degrees centigrade (75 degrees fahrenheit). Fluctuating temperatures causes product oxidation. Do not use this product if coated with brownish-yellow basic ferric sulfate. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-ACGIH Threshold Limit Value (TLV):  
1 mg/m<sup>3</sup> (TWA) soluble iron salt as Fe

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to

prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible.

Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Blue green crystals.

**Odor:**

Odorless.

**Solubility:**

48.6 g/100 g water @ 50C (122F)

**Density:**

1.90

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

> 300C (> 572F) Decomposes.

**Melting Point:**

57C (135F) Loses water

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Loses water in dry air and oxidizes upon exposure to moisture, forming a brown coating of extremely corrosive basic ferric sulfate.

**Hazardous Decomposition Products:**

Burning may produce sulfur oxides.

**Hazardous Polymerization:**

This substance does not polymerize.

**Incompatibilities:**

Alkalis, soluble carbonates, and oxidizing materials. Reacts in moist air to form ferric sulfate.

**Conditions to Avoid:**

Moisture.

---

## 11. Toxicological Information

Oral rat LD50: 319 mg/kg. Investigated as a tumorigen and mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
-----			
Ferrous Sulfate (7720-78-7)	No	No	None

12. Ecological Information

**Environmental Fate:**  
No information found.  
**Environmental Toxicity:**  
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
-----				
Ferrous Sulfate (7720-78-7)	Yes	Yes	Yes	Yes
-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
-----				
Ferrous Sulfate (7720-78-7)	Yes	Yes	No	Yes
-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
-----				
Ferrous Sulfate (7720-78-7)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8 (d)
-----	-----	-----	-----
Ferrous Sulfate (7720-78-7)	1000	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
Reactivity: No      (Pure / Solid)

**Australian Hazchem Code:** None allocated.  
**Poison Schedule:** None allocated.  
**WHMIS:**  
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 0 Reactivity: 0  
**Label Hazard Warning:**  
WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS THE LIVER.  
**Label Precautions:**  
Avoid contact with eyes, skin and clothing.  
Wash thoroughly after handling.  
Avoid breathing dust.  
Keep container closed.  
Use only with adequate ventilation.  
**Label First Aid:**  
If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.  
**Product Use:**  
Laboratory Reagent. Bulk pharmaceutical chemical.  
**Revision Information:**  
No Changes.  
**Disclaimer:**  
\*\*\*\*\*

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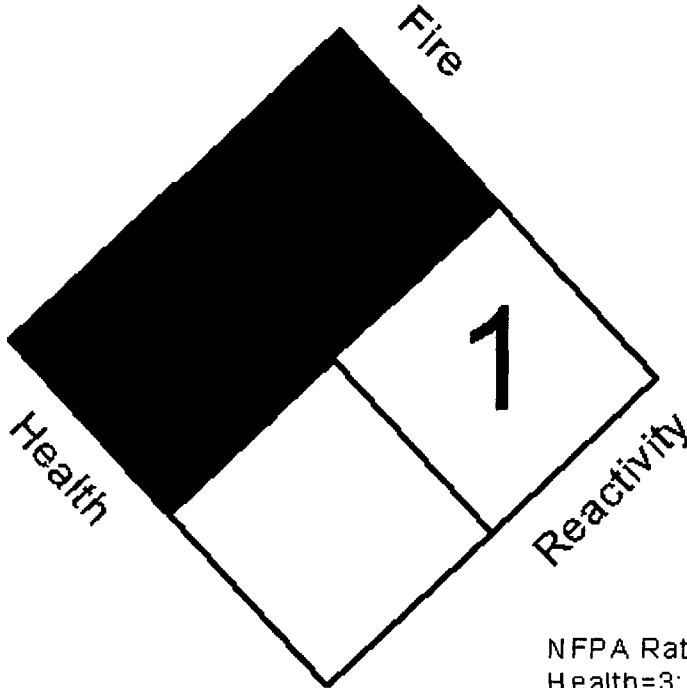
**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

**Fluorosilic Acid**



This Information  
is provided for  
your protection  
by

**LCI LTD**  
THE FLUORIDE SPECIALISTS  
**904-241-1200**



For 24 Hour  
Emergency  
Assistance  
Call:  
**CHEMTREC**  
**800-424-9300**

NFPA Ratings (Scale 0-4)  
Health=3; Fire=0; Reactivity= 1

**MATERIAL SAFETY DATA SHEET**

This information is provided for your protection by:

**LCI,Ltd.**  
**P. O. Box 49000**  
**Jacksonville Beach, FL 32240-9000**  
**904-241-1200**

**24 Hour Emergency Assistance:**  
**Chemtrec: 1-800-424-9300**

**Fluorosilicic Acid**

Section I	Product Name and Description
Section II	Personal Protection Information
Section III	Health Information
Section IV	Emergency and First Aid Procedures
Section V	Ingredients
Section VI	Physical Data
Section VII	Reactivity
Section VIII	Fire and Explosion Hazards
Section IX	Storage and Special Precautions
Section X	Transportation Requirements
Section XI	Emergency Action - Spill or Leak



# Section I

## PRODUCT NAME AND DESCRIPTION

<b>DOT Chemical Name:</b>	Fluorosilicic Acid Hydrofluosilicic Acid,	
<b>Synonyms:</b>	Fluosilicic Acid, Hexafluosilicic Acid	
<b>Chemical Family:</b>	Inorganic Acid	<b>Formula:</b> $H_2SiF_6$
<b>CAS Number:</b> 16961-83-4		<b>NIOSH Number:</b> V V 8225000

**Note:** N/A indicates Not Applicable where shown.

# Section II

## PERSONAL PROTECTION INFORMATION

**Respiratory Protection:** A NIOSH approved cartridge respirator with full-face shield. Chemical cartridge should provide protection against acid fumes (Hydrogen Fluoride). For concentrations greater than 20ppm, a NIOSH approved self-contained breathing apparatus with full-face shield should be used.

**Eye and Face Protection:** Use tight-fitting chemical splash goggles and a full-face shield, 8 inch minimum. Contact lenses should not be worn.

**Hand, Arm and Body Protection:** Prevent contact with skin by use of acid-proof clothing, gloves and shoes. Use a NIOSH approved acid proof suit and boots where liquid or high vapor concentration is possible.

**Other Protective Clothing and Equipment:** Eye wash and emergency shower facilities should be available in handling area.

**Engineering Controls:** General or local exhaust systems sufficient to maintain vapors below  $2.5\text{ mg/m}^3$  (as F).

# Section III

## HEALTH INFORMATION

**OSHA Permissible Exposure Limit (PEL):**  $2.5\text{mg/m}^3$ (as F)

**ACGIH Threshold Limit Value (TLV):**  $2.5\text{mg/m}^3$ (as F)

**Listing in the following:**

Department of Transportation Hazardous Material Regulations (49CFR)  
Massachusetts Hazardous Substance List  
toxic Substances Control Act Inventory of toxic Substances (TSCA)

**OSHA Health Hazard Classification:** Corrosive

**Primary Route(s) of Entry:** Eye and skin contact, inhalation

**Symptoms of Exposure:**

**Acute:** Liquid or vapors can cause severe irritation and burns which may not be apparent for hours. Can cause severe irritation to the lungs, nose and throat if swallowed, can cause severe damage to throat and stomach.

**Chronic:** Prolonged exposure could result in bone changes, corrosive effect on mucous membranes including ulceration of nose, throat and bronchial tubes, cough, shock, pulmonary edema, Fluorosis, coma and death.

**Aggravated Medical Condition:** Any skin condition and/or pre-existing respiratory disease including asthma and emphysema.

**Toxic Data:** LD<sub>50</sub> 200 mg/kg (Oral - Guinea Pig)

# Section IV

## EMERGENCY AND FIRST AID PROCEDURES

**Inhalation:** Remove exposed person to an uncontaminated area immediately. If breathing has stopped, start artificial respiration at once. Oxygen should be provided for an exposed person having difficulty breathing (but only by an authorized person) until exposed person is able to breathe easily by themselves. Exposed person should be examined by a physician.

**Eye Contact:** Flush eyes for at least 15 minutes with large amounts of water. Eyelids should be held apart during the flushing to insure contact of water with all accessible tissue of the eyes and lids. Medical attention should be given as soon as possible.

**Skin Contact:** Exposed person should be removed to an uncontaminated area and subjected immediately to a drenching shower of water for a minimum of 15 to 20 minutes. Remove all contaminated clothing while under shower. Medical attention should be given as soon as possible for all burns, regardless of how minor they seem.

**Ingestion:** If conscious, give the exposed person large quantities of water immediately to dilute the acid. Do NOT induce vomiting. Milk may be given for its soothing effect. A physician should be contacted immediately.

**Note to Physician:** Beware of late onset of pulmonary edema for up to 48 hours. Treat severe burns similar to Hydrofluoric Acid exposure.

# Section V

## INGREDIENTS

Composition	Percentage
H <sub>2</sub> SiF <sub>6</sub>	25.0 +/- 2%
H <sub>2</sub> O	75.0 +/- 2%

# Section VI

## PHYSICAL DATA

<b>Boiling Point:</b> 222°F (105°C)	<b>Freezing Point:</b> 4°F(-15.5°C)
<b>Specific Gravity(H<sub>2</sub>O=1):</b> 1.234 @ 25%	<b>Vapor Pressure(mm Hg):</b> 24 @ 77° F
<b>Percent Volatile by Volume:</b> N/A	<b>Vapor Density (Air=1):</b> N/A
<b>Solubility in Water:</b> Complete	<b>Evaporation Rate:</b> N/A
<b>Physical State:</b> Fuming Liquid	<b>Molecular Weight:</b> 144.08
<b>Bulk Density:</b> 10.29 lbs/gal @ 25%	<b>pH (1% Solution):</b> 1.2
<b>Appearance and Odor:</b> Water white to straw yellow, burning liquid, with pungent odor	

# Section VII

## REACTIVITY

**Stability:** Stable.

**Hazardous Polymerization:** Will not occur.

**Conditions and Materials to Avoid:** Metal, glass, stoneware, alkali and strong concentrated acids.

**Hazardous Decomposition Products:** When heated to decomposition (222°F) it emits highly toxic and corrosive fumes of Hydrogen Fluoride, Silicon Tetra-fluoride and Hydrogen Gas.

# Section VIII

## FIRE AND EXPLOSION HAZARDS

**Flash Point and Method Used:** N/A

**Flammable Limits - % Volume in Air:** Lower N/A Upper N/A

**Extinguishing Media:** Use agent which is appropriate for surrounding fire.

**Special Fire Fighting Procedures and Precautions:** Wear NIOSH approved self-contained acid suits.

**Auto Ignition Temperature:** N/A

**Unusual Fire and Explosion Hazards:** Reacts with many metals to produce flammable and explosive hydrogen gas. Keep container cool with water, using fog nozzles, as decomposition will occur above 222°F and produce toxic and corrosive fumes of fluoride.

# Section IX

## STORAGE AND SPECIAL PRECAUTIONS

**Handling and Storing Precautions:** Store in containers in cool, dry, well ventilated area away from sources of heat or ignition. Do NOT store in glass or stoneware. Use non-sparking tools. Keep separate from alkali

metals, oxidizing agent, combustible solids and organic peroxides.

**Ventilation:** Provide adequate general and/or local exhaust to maintain vapors below 2.5 mg/m<sup>3</sup> (as F).

**Precautions:** Do not inhale fumes and prevent skin contact. If pungent, irritating odor can be detected, workers are being over-exposed. Eye wash and safety shower should be available in all acid handling areas.

## Section X

### TRANSPORTATION REQUIREMENTS

**DOT Proper Shipping Name:** Fluorosilicic Acid

**DOT Hazard Class:** 8 (Corrosive)

**Identification Number:** UN 1778

**EPA Hazardous Substance:** No

**RCRA Status of Unused Material if Discarded:** Not Listed

**Waste Disposal Method:** Disposer must comply with federal, state and local disposal or discharge laws.

**Additional Comments:** For International transportation, Fluorosilicic Acid is regulated by the International Maritime Organization (IMO) and the International Air Transport Association (IATA) for vessel and air movement as a Class 8. Packaging, marking, labelling and shipping paper descriptions must precisely reflect the regulation for export movement.

**Packing Group:** II

**Subsidiary Hazard Class:** N/A

**Placarding Requirement:** Corrosive

**Reportable Quantity:** N/A

## Section XI

### EMERGENCY ACTION - SPILL OR LEAK

**Emergency Action:** Keep unnecessary people away. Stay upwind, keep out of low areas. Isolate hazard area and deny entry. We recommend that the user establish a spill prevention, control and countermeasure plan. This plan should include procedures for proper storage as well as containment and clean-up of spills and leaks. The procedures should conform to safe practices and provide for proper recovery and disposal in accordance with federal, state and local regulation. Contact Chemtrec at 1-800-424-9300 for 24-hour emergency assistance.

**Small Spills:** Any personnel in area should wear a NIOSH approved air supplied acid suit. Dike area to contain material. Do not allow solution to enter sewers or surface water. Neutralize the spill with water and lime (hydrated lime). Take up with sand or non-combustible absorbent material and place in containers for later disposal. Provide ventilation and be wary of hydrogen generation upon reaction with some metals. Contact Chemtrec at 1-800-424-9300 for 24-hour emergency assistance.

**Large Spills:** Contact Chemtrec at 1-800-424-9300 for 24-hour emergency assistance. Any personnel in area should wear a NIOSH approved air supplied acid suit. Dike area ahead of spill to contain material. Do not allow solution to enter sewers or surface water. Neutralize the spill with water and lime (hydrated lime). Provide ventilation and be wary of hydrogen generation upon reaction with some metals. Notify the National Response Center, if required.

### DISCLAIMER

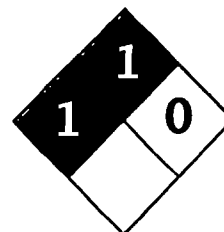
The information presented herein is based on data considered to be accurate and that reflects the requirements of the OSHA Hazard Communication Standards in effect as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any

hazards inherent in the nature of the product.

## Guar Gum



**Science Lab.com**  
Chemicals & Laboratory Equipment



Health	1
Fire	1
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet Guar gum MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Guar gum

**Catalog Codes:** SLG1537, SLG2035

**CAS#:** 9000-30-0

**RTECS:** MG0185000

**TSCA:** TSCA 8(b) inventory: Guar gum

**CI#:** Not available.

**Synonym:**

**Chemical Name:** Not available.

**Chemical Formula:** Not available.

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

**CHEMTREC (24HR Emergency Telephone), call:**  
1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Guar gum	9000-30-0	100

**Toxicological Data on Ingredients:** Not applicable.

### Section 3: Hazards Identification

**Potential Acute Health Effects:** Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

Repeated or prolonged exposure is not known to aggravate medical condition.

### Section 4: First Aid Measures

**Eye Contact:** No known effect on eye contact, rinse with water for a few minutes.

**Skin Contact:**

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

**Serious Skin Contact:** Not available.

**Inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**Serious Ingestion:** Not available.

**Section 5: Fire and Explosion Data**

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Not available.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available.

Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

**Section 6: Accidental Release Measures****Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

**Section 7: Handling and Storage****Precautions:**



Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. If ingested, seek medical advice immediately and show the container or the label.

**Storage:**

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

## Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:** Not available.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** Not available.

**Color:** Not available.

**pH (1% soln/water):** Not available.

**Boiling Point:** Not available.

**Melting Point:** Decomposes.

**Critical Temperature:** Not available.

**Specific Gravity:** Not available.

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (In Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:** Not available.

### Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Not available.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** No.

### Section 11: Toxicological Information

**Routes of Entry:** Not available.

**Toxicity to Animals:** Acute oral toxicity (LD50): 6770 mg/kg [Rat].

**Chronic Effects on Humans:** Not available.

**Other Toxic Effects on Humans:** Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:** Nuisance dust.

### Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are more toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

### Section 13: Disposal Considerations

**Waste Disposal:**

### Section 14: Transport Information

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

### Section 15: Other Regulatory Information

**Federal and State Regulations:** TSCA 8(b) inventory: Guar gum

**Other Regulations:** Not available..

**Other Classifications:**

**WHMIS (Canada):** Not controlled under WHMIS (Canada).

**DSCL (EEC):**

This product is not classified according to the EU regulations.

**HMIS (U.S.A.):**

**Health Hazard:** 1

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.

Lab coat.

Dust respirator. Be sure to use an approved/certified respirator or equivalent.

Safety glasses.

### Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:19 PM

**Last Updated:** 10/10/2005 08:19 PM

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**Nalco 71D5  
Defoamer**

**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**PRODUCT NAME : **Nalco® 71D5 PLUS**APPLICATION : **ANTIFOAM**COMPANY IDENTIFICATION : **Nalco Company  
1601 W. Diehl Road  
Naperville, Illinois  
60563-1198****EMERGENCY TELEPHONE NUMBER(S) : (800) 424-9300 (24 Hours) CHEMTREC****NFPA 704M/HMIS RATING****HEALTH : 2 / 2    FLAMMABILITY : 2 / 2    INSTABILITY : 0 / 0    OTHER :**  
0 = Insignificant   1 = Slight   2 = Moderate   3 = High   4 = Extreme**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Paraffin Wax	8002-74-2	0.0 - 1.0
Hydrotreated Light Distillate	64742-47-8	10.0 - 20.0
Straight Run Middle Distillate	64741-44-2	30.0 - 60.0
Polypropylene Glycol	25322-69-4	5.0 - 10.0
Aliphatic alcohol	Proprietary	1.0 - 5.0
Aliphatic alcohol	Proprietary	1.0 - 5.0

**3. HAZARDS IDENTIFICATION****\*\*EMERGENCY OVERVIEW\*\*****WARNING**

Combustible. Irritating to eyes and skin.

Keep away from heat. Keep away from sources of ignition - No smoking. Keep container tightly closed. Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Use with adequate ventilation. Protect product from freezing. Do not take internally. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of soap and water.

Wear suitable protective clothing, gloves and eye/face protection.

Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions.

**PRIMARY ROUTES OF EXPOSURE :**

Eye, Skin, Inhalation

**Nalco Company 1601 W. Diehl Road • Naperville, Illinois 60563-1198 • (630)305-1000**For additional copies of an MSDS visit [www.nalco.com](http://www.nalco.com) and request access



## MATERIAL SAFETY DATA SHEET

### PRODUCT

**Nalco® 71D5 PLUS**

### EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

#### HUMAN HEALTH HAZARDS - ACUTE :

##### EYE CONTACT :

Can cause moderate irritation.

##### SKIN CONTACT :

Can cause moderate irritation.

##### INGESTION :

Not a likely route of exposure. May cause nausea and vomiting. Can cause chemical pneumonia if aspirated into lungs following ingestion. Can cause central nervous system depression. There may be irritation to the gastrointestinal tract.

##### INHALATION :

Repeated or prolonged exposure may irritate the respiratory tract.

#### SYMPTOMS OF EXPOSURE :

##### Acute :

Inhalation of high concentrations of organic solvents can cause nausea, dizziness, vomiting, stupor or unconsciousness.

##### Chronic :

Frequent or prolonged contact with product may defat and dry the skin, leading to discomfort and dermatitis.

#### AGGRAVATION OF EXISTING CONDITIONS :

Skin contact may aggravate an existing dermatitis condition.

## 4. FIRST AID MEASURES

##### EYE CONTACT :

Immediately flush eye with water for at least 15 minutes while holding eyelids open. Get medical attention.

##### SKIN CONTACT :

Immediately wash with plenty of soap and water. If symptoms develop, seek medical advice.

##### INGESTION :

Do not induce vomiting: contains petroleum distillates and/or aromatic solvents. If conscious, washout mouth and give water to drink. Get medical attention.

##### INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

#### NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****5. FIRE FIGHTING MEASURES****FLASH POINT :** 197 °F / 92 °C ( PMCC )**EXTINGUISHING MEDIA :**

Alcohol foam, Carbon dioxide, Foam, Dry powder, Other extinguishing agent suitable for Class B fires, For large fires, use water spray or fog, thoroughly drenching the burning material.  
Water mist may be used to cool closed containers.

**UNSUITABLE EXTINGUISHING MEDIA :**

Do not use water unless flooding amounts are available.

**FIRE AND EXPLOSION HAZARD :**

Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition. May evolve oxides of carbon (COx) under fire conditions.

**SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :**

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

**6. ACCIDENTAL RELEASE MEASURES****PERSONAL PRECAUTIONS :**

Restrict access to area as appropriate until clean-up operations are complete. Ensure clean-up is conducted by trained personnel only. Ventilate spill area if possible. Do not touch spilled material. Remove sources of ignition. Stop or reduce any leaks if it is safe to do so. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Notify appropriate government, occupational health and safety and environmental authorities.

**METHODS FOR CLEANING UP :**

**SMALL SPILLS:** Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

**ENVIRONMENTAL PRECAUTIONS :**

Prevent material from entering sewers or waterways.

**7. HANDLING AND STORAGE****HANDLING :**

Use with adequate ventilation. Keep the containers closed when not in use. Do not use in locations where vapor is likely to travel to welding flames or arcs or to other hot surfaces. Vapors are much heavier than air, this can result in uneven distribution. Do not take internally. Do not breathe vapors/gases/dust. Do not get in eyes, on skin, on clothing. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure all containers are labeled.



**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****STORAGE CONDITIONS :**

Store away from heat and sources of ignition. Store separately from oxidizers. Store the containers tightly closed. Use proper grounding procedures. Have appropriate fire extinguishers available in and near the storage area. Store in suitable labeled containers. Connections must be grounded to avoid electrical charges.

**SUITABLE CONSTRUCTION MATERIAL :**

Brass, Buna-N, Polyurethane, Viton, Stainless Steel 304, Stainless Steel 316L, Plasite 4300, Plasite 7122, CPVC (rigid), Polypropylene (rigid), Polyethylene (rigid), Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

**UNSUITABLE CONSTRUCTION MATERIAL :**

Hypalon, Neoprene, Mild steel, EPDM

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****OCCUPATIONAL EXPOSURE LIMITS :**

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

**ACGIH/TLV :****Substance(s)**

Oil Mist

TWA: 5 mg/m3

STEL: 10 mg/m3

Paraffin Wax Fume

TWA: 2 mg/m3

**OSHA/PEL :****Substance(s)**

Oil Mist

TWA: 5 mg/m3

STEL: 10 mg/m3

Paraffin Wax Fume

TWA: 2 mg/m3

**AIHA/WEEL :****Substance(s)**

Polypropylene Glycol

TWA: 10 mg/m3

**ENGINEERING MEASURES :**

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

**RESPIRATORY PROTECTION :**

Where concentrations in air may exceed the limits given in this section, the use of a half face filter mask or air supplied breathing apparatus is recommended. A suitable filter material depends on the amount and type of chemicals being handled. Consider the use of filter type: Multi-contaminant cartridge, with a Particulate pre-filter. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****HAND PROTECTION :**

When handling this product, the use of chemical gauntlets is recommended. The choice of work glove depends on work conditions and what chemicals are handled, but we have positive experience under light handling conditions using gloves made from, PVC. Gloves should be replaced immediately if signs of degradation are observed. Breakthrough time not determined as preparation, consult PPE manufacturers.

**SKIN PROTECTION :**

When handling this product, the use of overalls, a chemical resistant apron and rubber boots is recommended. A full slicker suit is recommended if gross exposure is possible.

**EYE PROTECTION :**

Wear chemical splash goggles.

**HYGIENE RECOMMENDATIONS :**

Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

**HUMAN EXPOSURE CHARACTERIZATION :**

Based on our recommended product application and personal protective equipment, the potential human exposure is: Moderate

**9. PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE	Liquid
APPEARANCE	Clear Light yellow
ODOR	Hydrocarbon
SPECIFIC GRAVITY	0.84 @ 77 °F / 25 °C
DENSITY	7.0 lb/gal
SOLUBILITY IN WATER	Insoluble
VISCOSITY	10 cps @ 72 °F / 22.2 °C
POUR POINT	-50 °F / -45 °C
INITIAL BOILING POINT	270 °F / 132.2 °C
VAPOR PRESSURE	5.1 mm Hg @ 100 °F / 37.8 °C

Note: These physical properties are typical values for this product and are subject to change.

**10. STABILITY AND REACTIVITY****STABILITY :**

Stable under normal conditions.

**HAZARDOUS POLYMERIZATION :**

Hazardous polymerization will not occur.

**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****CONDITIONS TO AVOID :**

Heat and sources of ignition including static discharges. Extremes of temperature

**MATERIALS TO AVOID :**

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Bases Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, calcium hydroxide (lime), cyanide, sulfide, hypochlorites, chlorites) may generate heat, splattering or boiling and toxic vapors.

**HAZARDOUS DECOMPOSITION PRODUCTS :**

Under fire conditions: Oxides of carbon

**11. TOXICOLOGICAL INFORMATION**

The following results are for the product.

**ACUTE ORAL TOXICITY :**

Species	LD50	Test Descriptor
Rat	> 15,380 mg/kg	Product
Rating :	Non-Hazardous	

**ACUTE DERMAL TOXICITY :**

Species	LD50	Test Descriptor
Rabbit	> 3,038 mg/kg	Product
Rating :	Non-Hazardous	

**PRIMARY SKIN IRRITATION :**

Draize Score	Test Descriptor
3.1 / 8.0	Product
Rating :	Moderately irritating

**PRIMARY EYE IRRITATION :**

Draize Score	Test Descriptor
6.0 / 110.0	Product
Rating :	Minimally irritating

**SENSITIZATION :**

This product is not expected to be a sensitizer.

**CARCINOGENICITY :**

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

**HUMAN HAZARD CHARACTERIZATION :**

Based on our hazard characterization, the potential human hazard is: Moderate

**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****12. ECOLOGICAL INFORMATION****ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product.

**ACUTE FISH RESULTS :**

Species	Exposure	LC50	Test Descriptor
Bluegill Sunfish	96 hrs	121 mg/l	Product
Rainbow Trout	96 hrs	310 mg/l	Product
Fathead Minnow	96 hrs	190 mg/l	Product

**ACUTE INVERTEBRATE RESULTS :**

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna	48 hrs	220 mg/l	130 mg/l	Product
Ceriodaphnia dubia	48 hrs	4.32 mg/l		Similar Product

**PERSISTENCY AND DEGRADATION :**

Total Organic Carbon (TOC) : 195,870 mg/l

Chemical Oxygen Demand (COD) : 2,500,000 mg/l

**Biological Oxygen Demand (BOD) :**

Incubation Period	Value	Test Descriptor
	102,440 mg/l	Product

OECD 301 D: 28 Day 70-80%

The organic portion of this preparation is expected to be inherently biodegradable.

**MOBILITY :**

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
10 - 30%	30 - 50%	30 - 50%

The portion in water is expected to float on the surface.

**BIOACCUMULATION POTENTIAL**

This preparation or material is not expected to bioaccumulate.

**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION**

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: High

If released into the environment, see CERCLA/SUPERFUND in Section 15.

**13. DISPOSAL CONSIDERATIONS**

If this product becomes a waste, it is not a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261, since it does not have the characteristics of Subpart C, nor is it listed under Subpart D.

As a non-hazardous waste, it is not subject to federal regulation. Consult state or local regulation for any additional handling, treatment or disposal requirements. For disposal, contact a properly licensed waste treatment, storage, disposal or recycling facility.

**14. TRANSPORT INFORMATION**

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

**LAND TRANSPORT :**

For Packages Less Than Or Equal To 119 Gallons:

Proper Shipping Name :

**PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION**

For Packages Greater Than 119 Gallons:

Proper Shipping Name :

Technical Name(s) :

UN/ID No :

Hazard Class - Primary :

Packing Group :

**COMBUSTIBLE LIQUID, N.O.S.  
PETROLEUM HYDROCARBON  
NA 1993  
COMBUSTIBLE  
III**

Flash Point :

**92 °C / 197 °F****AIR TRANSPORT (ICAO/IATA) :**

Proper Shipping Name :

**PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION****MARINE TRANSPORT (IMDG/IMO) :**

Proper Shipping Name :

**PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION**

**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****15. REGULATORY INFORMATION**

NATIONAL REGULATIONS, USA :

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Paraffin Wax : Exposure Limit

Hydrotreated Light Distillate : Exposure Limit

Straight Run Middle Distillate : Combustible., HARMFUL

Polypropylene Glycol : Exposure Limit

Aliphatic alcohol : Combustible.

Aliphatic alcohol : Combustible.

CERCLA/SUPERFUND, 40 CFR 117, 302 :

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

X	Immediate (Acute) Health Hazard
-	Delayed (Chronic) Health Hazard
X	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

NSF NON-FOOD COMPOUNDS REGISTRATION PROGRAM (former USDA List of Proprietary Substances & Non-Food Compounds) :

NSF Registration number for this product is : 138905

This product is acceptable for treatment of cooling and retort water (G5) in and around food processing areas.

**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :

None of the substances are specifically listed in the regulation.

CLEAN AIR ACT, Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

None of the substances are specifically listed in the regulation.

Substance(s)	Citations
• Polypropylene Glycol	Sec. 111

**CALIFORNIA PROPOSITION 65 :**

Substances known to the State of California to cause cancer are present as an impurity or residue.

**MICHIGAN CRITICAL MATERIALS :**

None of the substances are specifically listed in the regulation.

**STATE RIGHT TO KNOW LAWS :**

The following substances are disclosed for compliance with State Right to Know Laws:

Aliphatic alcohol	Proprietary
Paraffin Wax	8002-74-2
Aliphatic alcohol	Proprietary
Straight Run Middle Distillate	64741-44-2

**NATIONAL REGULATIONS, CANADA :****WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

**WHMIS CLASSIFICATION :**

B3 - Combustible Liquids, D2B - Materials Causing Other Toxic Effects - Toxic Material

**CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :**

The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

**INTERNATIONAL CHEMICAL CONTROL LAWS****AUSTRALIA**

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

**EUROPE**

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****16. OTHER INFORMATION**

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

\* The human risk is: Moderate

\* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

**REFERENCES**

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight# (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.



**MATERIAL SAFETY DATA SHEET****PRODUCT****Nalco® 71D5 PLUS****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

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The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS# CD-ROM Version),  
Micromedex, Inc., Englewood, CO.

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Prepared By : Product Safety Department

Date issued : 10/30/2006

Version Number : 1.13

Nalco 8817L  
Defoamer

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 8817****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**PRODUCT NAME : **NALCO 8817**APPLICATION : **ANTIFOAM**COMPANY IDENTIFICATION : **Nalco Company  
1601 W. Diehl Road  
Naperville, Illinois  
60563-1198**EMERGENCY TELEPHONE NUMBER(S) : **(800) 424-9300 (24 Hours) CHEMTREC****NFPA 704M/HMIS RATING**HEALTH : **2 / 2** FLAMMABILITY : **1 / 1** INSTABILITY : **0 / 0** OTHER :  
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Straight Run Middle Distillate	64741-44-2	60.0 - 100.0
Polypropylene Glycol	25322-69-4	5.0 - 10.0
Aliphatic hydrocarbon	Proprietary	5.0 - 10.0
Paraffin Wax	8002-74-2	1.0 - 5.0
Oxyalkylate	Proprietary	1.0 - 5.0

**3. HAZARDS IDENTIFICATION****\*\*EMERGENCY OVERVIEW\*\*****WARNING**

Irritating to skin.

Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Use with adequate ventilation. Do not take internally. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of soap and water. Protect product from freezing.

Wear suitable protective clothing, gloves and eye/face protection.

Low Fire Hazard; liquids may burn upon heating to temperatures at or above the flash point. May evolve oxides of carbon (COx) under fire conditions.

**PRIMARY ROUTES OF EXPOSURE :**

Eye, Skin, Inhalation



## MATERIAL SAFETY DATA SHEET

PRODUCT

**NALCO 8817**

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

### HUMAN HEALTH HAZARDS - ACUTE :

#### EYE CONTACT :

Can cause mild, short-lasting irritation.

#### SKIN CONTACT :

Can cause mild to moderate irritation.

#### INGESTION :

Not a likely route of exposure. Can cause chemical pneumonia if aspirated into lungs following ingestion. There may be irritation to the gastro-intestinal tract with nausea and vomiting. Can cause central nervous system depression.

#### INHALATION :

Repeated or prolonged exposure may irritate the respiratory tract. Elevated temperatures or mechanical action may form vapors, mists or fumes which may be irritating to the eyes, nose, throat and lungs.

#### SYMPTOMS OF EXPOSURE :

##### Acute :

A review of available data does not identify any symptoms from exposure not previously mentioned.

##### Chronic :

Frequent or prolonged contact with product may defat and dry the skin, leading to discomfort and dermatitis.

#### AGGRAVATION OF EXISTING CONDITIONS :

Skin contact may aggravate an existing dermatitis condition.

### HUMAN HEALTH HAZARDS - CHRONIC :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

## 4. FIRST AID MEASURES

#### EYE CONTACT :

Immediately flush with plenty of water for at least 15 minutes. Get medical attention.

#### SKIN CONTACT :

Immediately wash with plenty of soap and water. If symptoms develop, seek medical advice.

#### INGESTION :

Do not induce vomiting: contains petroleum distillates and/or aromatic solvents. If conscious, washout mouth and give water to drink. Get medical attention.

#### INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

#### NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 8817****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****5. FIRE FIGHTING MEASURES****FLASH POINT :** 260 °F / 127 °C ( PMCC )**EXTINGUISHING MEDIA :**

Alcohol foam, Carbon dioxide, Foam, Dry powder, Other extinguishing agent suitable for Class B fires, For large fires, use water spray or fog, thoroughly drenching the burning material. Water mist may be used to cool closed containers.

**UNSUITABLE EXTINGUISHING MEDIA :**

Do not use water unless flooding amounts are available.

**FIRE AND EXPLOSION HAZARD :**

Low Fire Hazard; liquids may burn upon heating to temperatures at or above the flash point. May evolve oxides of carbon (COx) under fire conditions.

**SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :**

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

**6. ACCIDENTAL RELEASE MEASURES****PERSONAL PRECAUTIONS :**

Restrict access to area as appropriate until clean-up operations are complete. Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible. Do not touch spilled material. Remove sources of ignition. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Notify appropriate government, occupational health and safety and environmental authorities.

**METHODS FOR CLEANING UP :**

**SMALL SPILLS:** Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

**ENVIRONMENTAL PRECAUTIONS :**

Do not contaminate surface water.

**7. HANDLING AND STORAGE****HANDLING :**

Use with adequate ventilation. Keep the containers closed when not in use. Do not take internally. Do not get in eyes, on skin, on clothing. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Do not breathe vapors/gases/dust. Ensure all containers are labelled.

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 8817****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****STORAGE CONDITIONS :**

Protect product from freezing. Store away from heat and sources of ignition. Store separately from oxidizers. Store the containers tightly closed. Store in suitable labelled containers.

**SUITABLE CONSTRUCTION MATERIAL :**

Brass, Plexiglass, Kalrez, Nylon, Teflon, HDPE (high density polyethylene), Aluminum, Mild steel, Stainless Steel 304, Stainless Steel 316L, Hastelloy C-276, Compatibility with Plastic Materials can vary; we therefore recommend that compatibility is tested prior to use.

**UNSUITABLE CONSTRUCTION MATERIAL :**

Copper, Polypropylene, Polyethylene, EPDM, Alfax, PVC, Buna-N, Natural rubber, Polyurethane, Hypalon, Viton, Neoprene, Ethylene propylene

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****OCCUPATIONAL EXPOSURE LIMITS :**

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

**ACGIH/TLV :****Substance(s)**

Oil Mist (Mineral) TWA: 5 mg/m3

Paraffin Wax Fume TWA: 2 mg/m3

**OSHA/PEL :****Substance(s)**

Oil Mist (Mineral) TWA: 5 mg/m3

Paraffin Wax Fume TWA: 2 mg/m3

**:****Substance(s)****Manufacturer's Recommendation :****Substance(s)**

Straight Run Middle TWA: 500 mg/m3

**Distillate****AIHA/WEEL :****Substance(s)**

Polypropylene Glycol TWA: 10 mg/m3

**ENGINEERING MEASURES :**

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

**RESPIRATORY PROTECTION :**

Where concentrations in air may exceed the limits given in this section, the use of a half face filter mask or air supplied breathing apparatus is recommended. A suitable filter material depends on the amount and type of

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**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 8817****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

chemicals being handled. Consider the use of filter type: Multi-contaminant cartridge. with a Particulate pre-filter. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

**HAND PROTECTION :**

When handling this product, the use of chemical gauntlets is recommended., The choice of work glove depends on work conditions and what chemicals are handled, but we have positive experience under light handling conditions using gloves made from, PVC, Gloves should be replaced immediately if signs of degradation are observed., Breakthrough time not determined as preparation, consult PPE manufacturers.

**SKIN PROTECTION :**

Wear standard protective clothing. When handling this product, the use of overalls, a chemical resistant apron and rubber boots is recommended. A full slicker suit is recommended if gross exposure is possible.

**EYE PROTECTION :**

Wear chemical splash goggles.

**HYGIENE RECOMMENDATIONS :**

Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse. Always wash thoroughly after handling chemicals. When handling this product never eat, drink or smoke.

**HUMAN EXPOSURE CHARACTERIZATION :**

Based on our recommended product application and personal protective equipment, the potential human exposure is: Moderate

**9. PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE	Liquid
APPEARANCE	Straw-colored
ODOR	Hydrocarbon
SPECIFIC GRAVITY	0.865 @ 77 °F / 25 °C
DENSITY	6.9 - 7.5 lb/gal
SOLUBILITY IN WATER	Insoluble
VISCOSITY	13.8 cps @ 80 °F / 27 °C
VISCOSITY	16 cst @ 80 °F / 27 °C
FREEZING POINT	45 °F / 7.2 °C
POUR POINT	45 °F / 7.2 °C
MELTING POINT	ASTM D-97 45 °F / 7.22 °C
VAPOR PRESSURE	0.1 mm Hg @ 80 °F / 26 °C
VOC CONTENT	74 % Calculated

Note: These physical properties are typical values for this product and are subject to change.

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 8817****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****10. STABILITY AND REACTIVITY****STABILITY :**

Stable under normal conditions.

**HAZARDOUS POLYMERIZATION :**

Hazardous polymerization will not occur.

**CONDITIONS TO AVOID :**

Avoid extremes of temperature.

**MATERIALS TO AVOID :**

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors. Bases Contact with strong alkalies (e.g. ammonia and its solutions, carbonates, sodium hydroxide (caustic), potassium hydroxide, calcium hydroxide (lime), cyanide, sulfide, hypochlorites, chlorites) may generate heat, splattering or boiling and toxic vapors.

**HAZARDOUS DECOMPOSITION PRODUCTS :**

Under fire conditions: Oxides of carbon

**11. TOXICOLOGICAL INFORMATION**

The following results are for the product.

**ACUTE ORAL TOXICITY :**

Species	LD50	Test Descriptor
Rat	> 15,380 mg/kg	Product
Rating :	Non-Hazardous	

**ACUTE DERMAL TOXICITY :**

Species	LD50	Test Descriptor
Rabbit	> 3,038 mg/kg	Product
Rating :	Non-Hazardous	

**PRIMARY SKIN IRRITATION :**

Draize Score	Test Descriptor
3.1 / 8.0	Product
Rating :	Slightly irritating

**PRIMARY EYE IRRITATION :**

Draize Score	Test Descriptor
6.0 / 110.0	Product
Rating :	Practically non-irritating

**SENSITIZATION :**

This product is not expected to be a sensitizer.



**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 8817****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****CARCINOGENICITY :**

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

**HUMAN HAZARD CHARACTERIZATION :**

Based on our hazard characterization, the potential human hazard is: Low

**12. ECOLOGICAL INFORMATION****ECOTOXICOLOGICAL EFFECTS :**

The following results are for the product.

**ACUTE FISH RESULTS :**

Species	Exposure	LC50	Test Descriptor
Bluegill Sunfish		121 mg/l	Product
Fathead Minnow		190 mg/l	Product
Fathead Minnow	96 hrs	440 mg/l	Product
Rainbow Trout		310 mg/l	Product

**ACUTE INVERTEBRATE RESULTS :**

Species	Exposure	LC50	EC50	Test Descriptor
Daphnia magna		220 mg/l	130 mg/l	Product
Ceriodaphnia dubia	48 hrs	4.32 mg/l		Product

**PERSISTENCY AND DEGRADATION :**

Total Organic Carbon (TOC) : 195,870 mg/l

Chemical Oxygen Demand (COD) : 2,500,000 mg/l

**Biological Oxygen Demand (BOD) :**

Incubation Period	Value	Test Descriptor
	102,440 mg/l	

The organic portion of this preparation is expected to be inherently biodegradable.

**MOBILITY :**

The environmental fate was estimated using a level III fugacity model embedded in the EPI (estimation program interface) Suite TM, provided by the US EPA. The model assumes a steady state condition between the total input and output. The level III model does not require equilibrium between the defined media. The information provided is intended to give the user a general estimate of the environmental fate of this product under the defined conditions of the models. If released into the environment this material is expected to distribute to the air, water and soil/sediment in the approximate respective percentages;

Air	Water	Soil/Sediment
10 - 30%	30 - 50%	30 - 50%

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**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 8817****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

The portion in water is expected to float on the surface.

**BIOACCUMULATION POTENTIAL**

Component substances have a potential to bioaccumulate.

**ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION**

Based on our hazard characterization, the potential environmental hazard is: Low

Based on our recommended product application and the product's characteristics, the potential environmental exposure is: Moderate

If released into the environment, see CERCLA/SUPERFUND in Section 15.

**13. DISPOSAL CONSIDERATIONS**

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

**14. TRANSPORT INFORMATION**

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

**LAND TRANSPORT :**

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION

**AIR TRANSPORT (ICAO/IATA) :**

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION

**MARINE TRANSPORT (IMDG/IMO) :**

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION

**15. REGULATORY INFORMATION****NATIONAL REGULATIONS, USA :**

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**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 8817****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Straight Run Middle Distillate : Irritant, Combustible.

Polypropylene Glycol : Exposure Limit

Aliphatic hydrocarbon : Skin irritant, Combustible.

Paraffin Wax : Exposure Limit

Oxyalkylate : Eye irritant

CERCLA/SUPERFUND, 40 CFR 117, 302 :

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

- X Immediate (Acute) Health Hazard
- Delayed (Chronic) Health Hazard
- Fire Hazard
- Sudden Release of Pressure Hazard
- Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :

This product may contain trace levles (&lt;0.1% for carcinogens, &lt;1% all other substances) of the following substance(s) listed under the regulation:

Substance(s)	Citations
• Naphthalene	Sec. 307, Sec. 311
• Sulfuric Acid	Sec. 311

**MATERIAL SAFETY DATA SHEET****PRODUCT****NALCO 8817****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**

CLEAN AIR ACT, Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

This product contains the following substances listed in the regulation:

Substance(s)	Citations
• Polypropylene Glycol	Sec. 111

CALIFORNIA PROPOSITION 65 :

Substances known to the State of California to cause cancer are present as an impurity or residue.

MICHIGAN CRITICAL MATERIALS :

None of the substances are specifically listed in the regulation.

STATE RIGHT TO KNOW LAWS :

The following substances are disclosed for compliance with State Right to Know Laws:

Paraffin Wax	8002-74-2
Straight Run Middle Distillate	64741-44-2

NATIONAL REGULATIONS, CANADA :

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION :

D2B - Materials Causing Other Toxic Effects - Toxic Material

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) :

The substances in this preparation are listed on the Domestic Substances List (DSL), are exempt, or have been reported in accordance with the New Substances Notification Regulations.

INTERNATIONAL CHEMICAL CONTROL LAWS

AUSTRALIA

All substances in this product comply with the National Industrial Chemicals Notification & Assessment Scheme (NICNAS).

EUROPE

The substances in this preparation have been reviewed for compliance with the EINECS or ELINCS inventories.

KOREA

All substances in this product comply with the Toxic Chemical Control Law (TCCL) and are listed on the Existing Chemicals List (ECL)



## MATERIAL SAFETY DATA SHEET

PRODUCT

**NALCO 8817**

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

### 16. OTHER INFORMATION

Due to our commitment to Product Stewardship, we have evaluated the human and environmental hazards and exposures of this product. Based on our recommended use of this product, we have characterized the product's general risk. This information should provide assistance for your own risk management practices. We have evaluated our product's risk as follows:

\* The human risk is: Low

\* The environmental risk is: Low

Any use inconsistent with our recommendations may affect the risk characterization. Our sales representative will assist you to determine if your product application is consistent with our recommendations. Together we can implement an appropriate risk management process.

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

### REFERENCES

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight# (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.



## MATERIAL SAFETY DATA SHEET

PRODUCT

**NALCO 8817**

EMERGENCY TELEPHONE NUMBER(S)

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The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS# CD-ROM Version),  
Micromedex, Inc., Englewood, CO.

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Prepared By : Product Safety Department

Date issued : 05/22/2006

Version Number : 1.8



**Nalco 9710  
Flocculent**

**MATERIAL SAFETY DATA SHEET****PRODUCT****TECH LUBE 9710****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****PRODUCT NAME :** TECH LUBE 9710**COMPANY IDENTIFICATION :** Nalco Company  
1601 W. Diehl Road  
Naperville, Illinois  
60563-1198**EMERGENCY TELEPHONE NUMBER(S) :** (800) 424-9300 (24 Hours) CHEMTREC**NFPA 704M/HMIS RATING****HEALTH :** 1 / 1 **FLAMMABILITY :** 2 / 2 **INSTABILITY :** 0 / 0 **OTHER :**  
0 = Insignificant 1 = Slight 2 = Moderate 3 = High 4 = Extreme**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Our hazard evaluation has identified the following chemical substance(s) as hazardous. Consult Section 15 for the nature of the hazard(s).

Hazardous Substance(s)	CAS NO	% (w/w)
Solvent-Dewaxed Heavy Paraffinic Distillate	64742-65-0	10.0 - 30.0

**3. HAZARDS IDENTIFICATION****\*\*EMERGENCY OVERVIEW\*\*****WARNING**

Combustible.

Keep away from heat. Keep away from sources of ignition - No smoking. Keep container tightly closed. Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Use with adequate ventilation. Do not take internally. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of soap and water.

Wear suitable protective clothing, gloves and eye/face protection.

Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition.

**PRIMARY ROUTES OF EXPOSURE :**

Eye, Skin, Inhalation

**HUMAN HEALTH HAZARDS - ACUTE :****EYE CONTACT :**

Can cause mild irritation.

**SKIN CONTACT :**

May cause irritation with prolonged contact.

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## MATERIAL SAFETY DATA SHEET

PRODUCT

**TECH LUBE 9710**

EMERGENCY TELEPHONE NUMBER(S)

**(800) 424-9300 (24 Hours) CHEMTREC**

### INGESTION :

Not a likely route of exposure. May cause nausea and vomiting. Can cause chemical pneumonia if aspirated into lungs following ingestion. Can cause central nervous system depression.

### INHALATION :

Repeated or prolonged exposure may irritate the respiratory tract.

### SYMPTOMS OF EXPOSURE :

#### Acute :

Inhalation of high concentrations of organic solvents can cause nausea, dizziness, vomiting, stupor or unconsciousness.

#### Chronic :

Frequent or prolonged contact with product may defat and dry the skin, leading to discomfort and dermatitis.

### AGGRAVATION OF EXISTING CONDITIONS :

Skin contact may aggravate an existing dermatitis condition.

## 4. FIRST AID MEASURES

### EYE CONTACT :

Immediately flush eye with water for at least 15 minutes while holding eyelids open. Get medical attention.

### SKIN CONTACT :

Immediately wash with plenty of soap and water. If symptoms develop, seek medical advice.

### INGESTION :

Do not induce vomiting: contains petroleum distillates and/or aromatic solvents. If conscious, washout mouth and give water to drink. Get medical attention.

### INHALATION :

Remove to fresh air, treat symptomatically. If symptoms develop, seek medical advice.

### NOTE TO PHYSICIAN :

Based on the individual reactions of the patient, the physician's judgement should be used to control symptoms and clinical condition.

## 5. FIRE FIGHTING MEASURES

FLASH POINT : 141 °F / 60.6 °C ( TCC )

LOWER EXPLOSION LIMIT : 0.8 V%

UPPER EXPLOSION LIMIT : 7.5 V%

### EXTINGUISHING MEDIA :

Carbon dioxide, Foam, Dry powder, Other extinguishing agent suitable for Class B fires, For large fires, use water spray or fog, thoroughly drenching the burning material.



## MATERIAL SAFETY DATA SHEET

PRODUCT

**TECH LUBE 9710**

EMERGENCY TELEPHONE NUMBER(S)

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Water mist may be used to cool closed containers.

### UNSUITABLE EXTINGUISHING MEDIA :

Do not use water unless flooding amounts are available.

### FIRE AND EXPLOSION HAZARD :

Combustible Liquid; may form combustible mixtures at or above the flash point. Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition.

### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTING :

In case of fire, wear a full face positive-pressure self contained breathing apparatus and protective suit.

## **6. ACCIDENTAL RELEASE MEASURES**

### PERSONAL PRECAUTIONS :

Do not touch spilled material. Restrict access to area as appropriate until clean-up operations are complete. Use personal protective equipment recommended in Section 8 (Exposure Controls/Personal Protection). Stop or reduce any leaks if it is safe to do so. Ventilate spill area if possible. Remove sources of ignition. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Ensure clean-up is conducted by trained personnel only. Notify appropriate government, occupational health and safety and environmental authorities.

### METHODS FOR CLEANING UP :

**SMALL SPILLS:** Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area. **LARGE SPILLS:** Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Clean contaminated surfaces with water or aqueous cleaning agents. Contact an approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated in Section 13 (Disposal Considerations).

### ENVIRONMENTAL PRECAUTIONS :

Prevent material from entering sewers or waterways.

## **7. HANDLING AND STORAGE**

### HANDLING :

Use with adequate ventilation. Keep the containers closed when not in use. Do not use in locations where vapor is likely to travel to welding flames or arcs or to other hot surfaces. Vapors are much heavier than air, this can result in uneven distribution. Do not take internally. Do not breathe vapors/gases/dust. Do not get in eyes, on skin, on clothing. Have emergency equipment (for fires, spills, leaks, etc.) readily available.

### STORAGE CONDITIONS :

Store separately from oxidizers. Store away from heat and sources of ignition. Use proper grounding procedures. Have appropriate fire extinguishers available in and near the storage area. Store the containers tightly closed. Store in suitable labelled containers.

**MATERIAL SAFETY DATA SHEET**

PRODUCT

**TECH LUBE 9710**

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

## OCCUPATIONAL EXPOSURE LIMITS :

Exposure guidelines have not been established for this product. Available exposure limits for the substance(s) are shown below.

## ACGIH/TLV :

Substance(s)

Oil Mist (Mineral) TWA: 5 mg/m<sup>3</sup>

## OSHA/PEL :

Substance(s)

Oil Mist (Mineral) TWA: 5 mg/m<sup>3</sup>

## ENGINEERING MEASURES :

Use general ventilation with local exhaust ventilation.

## RESPIRATORY PROTECTION :

If significant mists, vapors or aerosols are generated an approved respirator is recommended. An organic vapor cartridge with dust/mist prefilter or supplied air may be used. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

## HAND PROTECTION :

Impervious gloves, 4H# (PE/EVAL), Responder#, Teflon#, Tychem 10 000#

## SKIN PROTECTION :

Wear impervious apron and boots.

## EYE PROTECTION :

Wear chemical splash goggles.

## HYGIENE RECOMMENDATIONS :

Keep an eye wash fountain available. Keep a safety shower available. If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE Liquid

APPEARANCE Clear

ODOR Characteristic

SPECIFIC GRAVITY 1.0

DENSITY 8.33 lb/gal



## MATERIAL SAFETY DATA SHEET

PRODUCT

**TECH LUBE 9710**

EMERGENCY TELEPHONE NUMBER(S)

(800) 424-9300 (24 Hours) CHEMTREC

SOLUBILITY IN WATER

Miscible

Note: These physical properties are typical values for this product and are subject to change.

### 10. STABILITY AND REACTIVITY

STABILITY :

Stable under normal conditions.

HAZARDOUS POLYMERIZATION :

Hazardous polymerization will not occur.

CONDITIONS TO AVOID :

Heat and sources of ignition including static discharges.

MATERIALS TO AVOID :

Contact with strong oxidizers (e.g. chlorine, peroxides, chromates, nitric acid, perchlorate, concentrated oxygen, permanganate) may generate heat, fires, explosions and/or toxic vapors.

HAZARDOUS DECOMPOSITION PRODUCTS :

Under fire conditions: Oxides of carbon

### 11. TOXICOLOGICAL INFORMATION

No toxicity studies have been conducted on this product.

SENSITIZATION :

This product is not expected to be a sensitizer.

CARCINOGENICITY :

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Governmental Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION :

Based on our hazard characterization, the potential human hazard is: Moderate

### 12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL EFFECTS :

No toxicity studies have been conducted on this product.

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION

Based on our hazard characterization, the potential environmental hazard is: Moderate

If released into the environment, see CERCLA/SUPERFUND in Section 15.

**MATERIAL SAFETY DATA SHEET****PRODUCT****TECH LUBE 9710****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****13. DISPOSAL CONSIDERATIONS**

If this product becomes a waste, it could meet the criteria of a hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Before disposal, it should be determined if the waste meets the criteria of a hazardous waste.

Hazardous Waste: D001, D018

Hazardous wastes must be transported by a licensed hazardous waste transporter and disposed of or treated in a properly licensed hazardous waste treatment, storage, disposal or recycling facility. Consult local, state, and federal regulations for specific requirements.

**14. TRANSPORT INFORMATION**

The information in this section is for reference only and should not take the place of a shipping paper (bill of lading) specific to an order. Please note that the proper Shipping Name / Hazard Class may vary by packaging, properties, and mode of transportation. Typical Proper Shipping Names for this product are as follows.

**LAND TRANSPORT :**

For Packages Less Than Or Equal To 119 Gallons:

Proper Shipping Name :

PRODUCT IS NOT REGULATED DURING  
TRANSPORTATION

For Packages Greater Than 119 Gallons:

Proper Shipping Name :

PETROLEUM DISTILLATES, N.O.S.

Technical Name(s) :

UN/ID No :

UN 1268

Hazard Class - Primary :

COMBUSTIBLE

Packing Group :

III

Flash Point :

60.6 °C / 141 °F

**AIR TRANSPORT (ICAO/IATA) :**

Proper Shipping Name :

PETROLEUM DISTILLATES, N.O.S.

Technical Name(s) :

UN/ID No :

UN 1268

Hazard Class - Primary :

3

Packing Group :

III

IATA Cargo Packing Instructions :

IATA Cargo Aircraft Limit :

(Max net quantity per package)

**MARINE TRANSPORT (IMDG/IMO) :**

Proper Shipping Name :

PETROLEUM DISTILLATES, N.O.S.

Technical Name(s) :

UN/ID No :

UN 1268

**MATERIAL SAFETY DATA SHEET****PRODUCT****TECH LUBE 9710****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC**Hazard Class - Primary :  
Packing Group :3  
III**15. REGULATORY INFORMATION**

NATIONAL REGULATIONS, USA :

OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 :

Based on our hazard evaluation, the following substance(s) in this product is/are hazardous and the reason(s) is/are shown below.

Solvent-Dewaxed Heavy Paraffinic Distillate : Combustible., Exposure Limit - Compound Class

CERCLA/SUPERFUND, 40 CFR 117, 302 :

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (TITLE III) - SECTIONS 302, 311, 312, AND 313 :

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355) :

This product does not contain substances listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 AND 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370) :

Our hazard evaluation has found this product to be hazardous. The product should be reported under the following indicated EPA hazard categories:

X	Immediate (Acute) Health Hazard
-	Delayed (Chronic) Health Hazard
X	Fire Hazard
-	Sudden Release of Pressure Hazard
-	Reactive Hazard

Under SARA 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are: 500 pounds or the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372) :

This product does not contain substances on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA) :

The substances in this preparation are included on or exempted from the TSCA 8(b) Inventory (40 CFR 710)

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15 / formerly Sec. 307, 40 CFR 116.4 / formerly Sec. 311 :

None of the substances are specifically listed in the regulation.

CLEAN AIR ACT, Sec. 111 (40 CFR 60, Volatile Organic Compounds), Sec. 112 (40 CFR 61, Hazardous Air Pollutants), Sec. 602 (40 CFR 82, Class I and II Ozone Depleting Substances) :

None of the substances are specifically listed in the regulation.

**MATERIAL SAFETY DATA SHEET****PRODUCT****TECH LUBE 9710****EMERGENCY TELEPHONE NUMBER(S)****(800) 424-9300 (24 Hours) CHEMTREC****CALIFORNIA PROPOSITION 65 :**

This product does not contain substances which require warning under California Proposition 65.

**MICHIGAN CRITICAL MATERIALS :**

None of the substances are specifically listed in the regulation.

**STATE RIGHT TO KNOW LAWS :**

None of the substances are specifically listed in the regulation.

**NATIONAL REGULATIONS, CANADA :****WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS) :**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

**WHMIS CLASSIFICATION :**

B3 - Combustible Liquids

**16. OTHER INFORMATION**

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to insure safe workplace operations. Please consult your local sales representative for any further information.

**REFERENCES**

Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, American Conference of Governmental Industrial Hygienists, OH., (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

Hazardous Substances Data Bank, National Library of Medicine, Bethesda, Maryland (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, Geneva: World Health Organization, International Agency for Research on Cancer.

Integrated Risk Information System, U.S. Environmental Protection Agency, Washington, D.C. (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Annual Report on Carcinogens, National Toxicology Program, U.S. Department of Health and Human Services, Public Health Service.

Title 29 Code of Federal Regulations, Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA), (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.



## MATERIAL SAFETY DATA SHEET

PRODUCT

**TECH LUBE 9710**

EMERGENCY TELEPHONE NUMBER(S)

**(800) 424-9300 (24 Hours) CHEMTREC**

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Registry of Toxic Effects of Chemical Substances, National Institute for Occupational Safety and Health, Cincinnati, OH, (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

Ariel Insight# (An integrated guide to industrial chemicals covered under major regulatory and advisory programs), North American Module, Western European Module, Chemical Inventories Module and the Generics Module (Ariel Insight# CD-ROM Version), Ariel Research Corp., Bethesda, MD.

The Teratogen Information System, University of Washington, Seattle, WA (TOMES CPS# CD-ROM Version), Micromedex, Inc., Englewood, CO.

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Prepared By : Product Safety Department

Date issued : 02/22/2004

Version Number : 1.2





**MATERIAL SAFETY DATA SHEET**

Hercules Incorporated  
Resins Division  
Hercules Plaza  
1313 North Market Street  
Wilmington, DE 19894-0001  
(302) 594-5000 (24 HRS)

**1 PRODUCT IDENTIFICATION**

PRODUCT NAME	PAMAK® 4 TALL-OIL FATTY ACID
CHEMICAL DESCRIPTION	distilled tall-oil fatty acids
CAS NUMBER	61790-12-3

**2 COMPOSITION / INFORMATION ON INGREDIENTS**

This product is not classified as hazardous under OSHA regulations, however, this MSDS contains valuable information important to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users/handlers of this product.

**3 HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW****CAUTION!**

May cause mild, temporary eye irritation.  
May cause mild, temporary skin irritation.  
Prolonged or repeated contact may cause skin irritation and may cause skin sensitization (allergic reaction) in susceptible individuals.

Refer to Section 5 for Hazardous Combustion Products, and Section 10 for Hazardous Decomposition/Hazardous Polymerization Products.

**4 FIRST AID MEASURES****SKIN**

Wash thoroughly with soap and water. Remove contaminated clothing. Thoroughly wash clothing before reuse. Get medical attention if irritation develops or persists. See Note to Physician.

**EYE**

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get medical attention if irritation persists.

**INHALATION**

No adverse health effects are expected from exposure to this product. Should exposure present a problem: Remove to fresh air. Get medical attention if nasal, throat or lung irritation develops.

**INGESTION**

No adverse health effects are expected from accidental ingestion of small amounts of this product. For ingestion of large amounts: If conscious, drink one to two glasses of water (8-16 oz.). Do not induce vomiting. Get immediate medical attention. Never give anything by mouth to an unconscious person.

PRODUCT NAME	PAMAK® 4 TALL-OIL FATTY ACID
MSDS NUMBER	676 4012 0100
VERSION	10

## NOTES TO PHYSICIAN

This product contains rosin or a rosin derivative. Rosin and some of its derivatives have been reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged skin contact.

## 5 FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

Water spray, dry chemical, foam, carbon dioxide or clean extinguishing agents may be used on fires involving this product.

### FIRE FIGHTING PROCEDURES

Wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) and full protective gear when fighting fires involving this product.

Cool containers to prevent rupture.

### CONDITIONS TO AVOID

None known.

### HAZARDOUS COMBUSTION PRODUCTS

If heated to combustion, the following substances may be formed: carbon monoxide, carbon dioxide, aldehydes, carboxylic acids and smoke.

**FLASH POINT** > 300 ° F

**AUTOIGNITION TEMPERATURE** 600 - 700 ° F

## 6 ACCIDENTAL RELEASE MEASURES

For small spills: Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Wash area with soap and water. For large spills: Dike to contain and pump into drums for use or disposal. In case of accidental spill or release, refer to Section 8, Personal Protective Equipment and General Hygiene Practices.

## 7 HANDLING & STORAGE

### GENERAL MEASURES

None known.

### MATERIALS OR CONDITIONS TO AVOID

Keep away from heat, flame, sparks and other ignition sources.

Spontaneous combustion may occur in materials soaked with this product and exposed to air, as well as soaked vessel and piping insulation.

Discard contaminated rags, insulation and other contaminated materials properly.

## 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

### WORK PRACTICES & ENGINEERING CONTROLS

Eyewash fountains and safety showers should be easily accessible.

Provide adequate ventilation.

Properly discard any item soaked with material, as spontaneous heating may occur.

### GENERAL HYGIENIC PRACTICES

Avoid contact with eyes, skin, and clothing.

Avoid contamination of food, beverages, or smoking materials.

Wash thoroughly after handling, and before eating, drinking or smoking.

Remove contaminated clothing promptly and clean thoroughly before reuse.

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**PRODUCT NAME** PAMAK® 4 TALL-OIL FATTY ACID

**MSDS NUMBER** 676 4012 0100

**VERSION** 10

2 / 5

## RECOMMENDED EXPOSURE LIMITS

This product is not considered to present an inhalation health hazard under reasonably anticipated conditions of use.

## PERSONAL PROTECTIVE EQUIPMENT

Safety glasses  
Impervious gloves  
Appropriate protective clothing

## PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE

Eliminate ignition sources.  
Completely isolate and thoroughly clean all equipment, piping, or vessels before beginning maintenance or repairs.  
Keep area clean. Product will burn.

## 9 PHYSICAL & CHEMICAL PROPERTIES

PHYSICAL STATE:	slightly viscous liquid
COLOR:	yellow - amber
ODOR:	fatty
Bolling Point	> 662 ° F
Specfic Gravity	0.91
Percent Volatile	negligible at 68° F
Vapor Pressure	< 1 mmHg at 68° F
Evaporation Rate	slower than butyl acetate
Vapor Density	heavier than air
Solubility In Water	slightly soluble in water
Freezing Point	congeals below 50° F

## 10 STABILITY & REACTIVITY

### HAZARDOUS DECOMPOSITION PRODUCTS

None anticipated under normal or recommended handling and storage conditions.

### HAZARDOUS POLYMERIZATION

Not anticipated under normal or recommended handling and storage conditions.

### GENERAL STABILITY CONSIDERATIONS

Stable under recommended handling and storage conditions.

### INCOMPATIBLE MATERIALS

None known

## 11 TOXICOLOGICAL INFORMATION

### CARCINOGENICITY INFORMATION

Not listed as a carcinogen by NTP. Not regulated as a carcinogen by OSHA. Not evaluated by IARC.

## **REPORTED HUMAN EFFECTS**

No human toxicity studies have been carried out with this product.

**COMPONENT - Rosin and some rosin derivatives:** Reported to cause an allergic skin reaction (sensitization) in susceptible individuals after repeated or prolonged contact.

**COMPONENT - linoleic acid:** In a dietary study, ingestion of large amounts caused changes in platelet functions (decreased platelet activation).

## **REPORTED ANIMAL EFFECTS**

**SIMILAR PRODUCT:** Rats fed up to 25% in the diet for 90 days experienced no dose-related effects.

**COMPONENT - fatty acids:** Slight skin and eye irritant in rabbits and guinea pigs.

## **MUTAGENICITY/GENOTOXICITY INFORMATION**

No mutagenicity studies have been carried out with this product.

# **12 ECOLOGICAL INFORMATION**

## **ECOTOXICOLOGICAL INFORMATION**

No ecological studies have been carried out on this product.

# **13 DISPOSAL CONSIDERATIONS**

## **WASTE DISPOSAL**

Incineration in accordance with applicable regulations is the recommended disposal method. Landfilling in a permitted solid or hazardous waste facility is a suitable alternative after solidification to remove free liquids. Disposal should be in accordance with applicable Federal, State and local regulations.

# **14 TRANSPORT INFORMATION**

## **GENERAL**

This product is not subject to DOT, ICAO, IMDG or ADR regulations.

For specific information regarding transportation of this product, please contact the Hercules Transportation Department at (302) 594-7356 or FAX at (302) 594-7256.

# **15 REGULATORY INFORMATION**

## **FEDERAL REGULATIONS**

**FOR USES INVOLVING COSMETIC OR SKIN-CONTACT APPLICATIONS:**

Pursuant to U.S. FDA Regulation 21 CFR 740.10:

"WARNING - The safety of this product has not been determined."

## **CHEMICAL INVENTORIES**

U.S. TSCA: The components of this product are included on the TSCA Inventory.

## **SARA TITLE III - SECTIONS 302/304**

This product is not an Extremely Hazardous Substance subject to reporting under 40CFR355.

## **SARA TITLE III - SECTION 311 AND 312**

NHH: Not a health hazard

NPH: Not a physical hazard

### **SARA TITLE III - SECTION 313**

This product does not contain any chemicals subject to reporting under Section 313 of Title III of the Superfund Amendments and Reauthorization Act and 40CFR372.

### **CERCLA**

This product does not contain any chemicals subject to reporting as a CERCLA Hazardous Substance under 40CFR302.4.

### **RCRA**

This product is not a hazardous waste as listed in 40CFR261.33. It does not exhibit any of the hazardous characteristics listed in 40CFR261, Subpart C.

## **16 OTHER INFORMATION**

### **HMIS RATINGS:**

<b>Health</b>	0	Minimal Hazard
<b>Flammability</b>	1	Slight Hazard
<b>Reactivity</b>	0	Minimal Hazard

### **LIST OF ACRONYMS**

ACGIH: American Conferences of Governmental Industrial Hygienists  
AIHA WEEL: American Industrial Hygienists Association - Workplace Environmental Exposure Level  
CASRN: Chemical Abstracts Service Registry Number  
CERCLA: Comprehensive Emergency Response, Compensation and Liability Act  
HMIS: Hazardous Materials Identification System  
IARC: International Agency for Research on Cancer  
NTP: National Toxicology Program  
OSHA: Occupational Safety and Health Administration  
PEL: OSHA Permissible Exposure Limit  
RCRA: Resource Conservation and Recovery Act  
RQ: Reportable Quantity  
SARA: Superfund Amendment Reauthorization Act  
STEL: Short-Term Exposure Limit  
TLV: Threshold Limit Values (registered trademark of ACGIH)  
TPQ: Threshold Planning Quantity  
TSCA: Toxic Substance Control Act  
TWA: Time Weighted Average

### **DISCLAIMER**

The information and recommendations contained in this Material Safety Data Sheet have been compiled from sources believed to be reliable and to represent the most reasonable current opinion on the subject when the MSDS was prepared. No warranty, guaranty or representation is made as to the correctness or sufficiency of the information. The user of this product must decide what safety measures are necessary to safely use this product, either alone or in combination with other products, and determine its environmental regulatory compliance obligations under any applicable federal or state laws.